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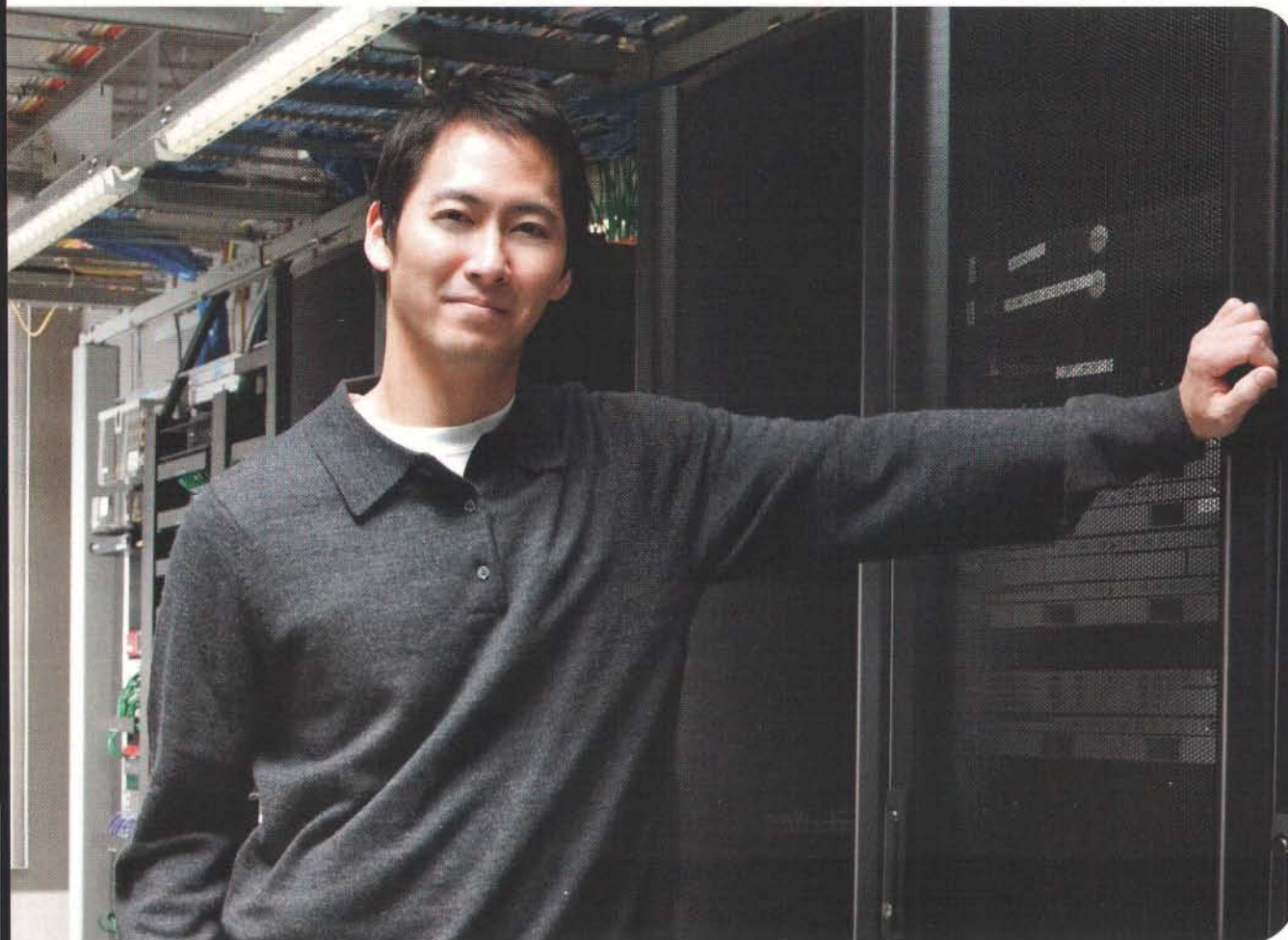
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From the Editor

A very happy Gregorian New Year to *MacTech* readers! As a time that people often make resolutions, it's a good time to talk about the upcoming year for *MacTech*. Resolutions are really just intentions. They're not even really full-fledged plans. It turns out that most people rescind or never even get around to doing what they resolved to do (or not to do) in the first place. It's in the spirit of that framework in which I make our resolutions this year.

First, we certainly intend to *not* slip on the IT developer coverage we're already including in the magazine. We have some great material already lined up and are always meeting (or chasing down) authors with new and practical points of view.

Second, we're looking forward to broadening the audience through new articles and events.

Events?!? Yes! That leads me to the third resolution: we will be running, and have some great ideas for the second *MacTech* Conference. We'll also be attending events, like LISA in California, MacSysAdmin in Sweden, NSConference in England and more. Please say hello if you see us out and about!

Fourth, you'll be seeing us more often run concise MacTech Boot Camp events.

Finally, we're just going to be open to what takes place. Life has a funny way of changing your plans without consulting you. From that, you can crumble, or rise to (and above) the challenge. We'll be doing both.

I have to say a sincere thank you to everyone that made 2010 a great success on many fronts. Here's to meeting working with everyone from 2010 again and meeting new people to add to the mix.

Speaking of people from 2010, we have everyone back for more, right here. This includes a new Swaine Manor, from returning author Michael Swaine, Developer to Developer by Boisy Pitre and another Consultant Cowboy by Ryan Wilcox.

As for new authors, we have plenty in that category as well. Ronald Gehrmann will be devoting a few articles to focus on helping the home user. Many of us deal with the technology environment of a business, small or large. However, home users—which there are an increasing number of—have slightly different rules and requirements. Sometimes, this is as simple as helping a family member. More and more, though, consultants are focusing their entire business around this market.

Another first time MacTech author, Joshua Long, takes a look at the recently released free edition of Sophos Anti-Virus Home for Mac. On home machines, it's often a question whether to run anti-virus or not. Let Joshua take you through the pros and cons.

Finally, this month we're beginning a series on working with Macs in the Enterprise from the Enterprise Desktop Alliance (EDA). The EDA is formed of several companies that help Mac admins leverage a Windows infrastructure to serve and manage Macintosh computers. What better time to start than in the month that sees the end of Apple's Xserve?

As always, we love hearing from readers, like you. Yes, you! Let us know what you like, and what you'd like to see at letters@mactech.com.

See you next month.

Ed Marczak,
Executive Editor



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SWAINE MANOR

Bludger and Larrikin Attend a Press Conference

...and say all the snarky things you'd say if you were there

by Michael Swaine

My friends Tom Bludger and Art Larrikin claim that they recently attended a press conference on Microsoft's presence at the upcoming Consumer Electronics Show, and to prove it they sent me this annotated transcript of the highlights of the conference. By "highlights" I see that they mean their own running commentary on the presentation. Frankly, I doubt that the whole thing ever happened. Nevertheless...

...we join the press conference already in progress. And already in italics.

Microsoft has a long history in the tablet computing market...

Bludger: Wow, are you really sure you want to call attention to that history, Microsoft?

Larrikin: Give 'em credit for perseverance: they're going to keep trying until somebody buys one.

A decade before the Apple iPad, Microsoft founder and former chief executive Bill Gates introduced the concept of a tablet computer, offering all the capabilities of a computer in a new form factor.

Bludger: So I guess I just imagined that Go Corporation introduced the tablet computer a decade before that.

Larrikin: That's why we go to press conferences. You learn something every time.

Bludger: So true. Thanks, Microsoft, for explaining to us who Bill Gates is.

Next month at CES, Microsoft will showcase a number of slate devices from companies like Dell and Samsung that will give Apple's iPad some competition.

Larrikin: I love a good fantasy.

Bludger: Wait, are they tablets or slates? I don't know whether my finger is supposed to be a pencil or a piece of chalk.

Larrikin: If they'd let us bring alcohol into these events we

could take a drink every time they mention Apple.

Microsoft's CEO Steve Ballmer will take the stage to present one or more of these devices.

Bludger: Prepare to be screamed at.

The Samsung slate will be similar to the Apple iPad in size and shape, but not as thin...

Larrikin: And not as pretty.

Bludger: Well, they're clearly addressing a niche that Apple has overlooked.

Larrikin: People who love fat, ugly devices.

Bludger: I know I'm going to run right out and buy one.

Another innovation is the slick keyboard that slides out of the device when it is in

landscape orientation.

Bludger: Great, because moving parts that can get jammed or broken are soooo 2011.

Larrikin: Wait, why is the keyboard "slick?" Won't that make it hard to type on?

Bludger: I think it must be greased to slide faster.

The slate will have two operating environments: one for landscape orientation and one for portrait orientation.

Larrikin: When will this second-class status end? I tell you a slate has the same rights regardless of its orientation.

Bludger: No, listen, I think this means you can turn Windows off just by turning the device on its side.

Larrikin: Big deal. I can do that with my Fujitsu laptop if I flip it hard enough.

Microsoft is confident that there is a large market of business people who want to use slate devices to run Word, Excel, and PowerPoint.

Larrikin: What incredibly innovative thinking.

Bludger: Microsoft is confident that there is a large market of people whose employers buy their computers and

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software for them and who will use whatever they are paid to use.

Larrikin: And the Gartner Group has the numbers to prove it.

Microsoft envisions a large market of applications written for these slates. Unlike Apple, Microsoft will not launch an app store to sell these applications, but will highlight them in a search interface on the slate.

Bludger: Translation: Microsoft will sell search results and placement to app developers.

Larrikin: Ooh. I was just going to say that.

MI



About The Author

Michael Swaine is the former editor-in-chief of Dr. Dobbs' Journal (<http://www.ddj.com>) and current editor of PragPub (<http://www.pragprog.com/magazine>), the electronic magazine for pragmatic programmers. You can reach him at mike@swaine.com.



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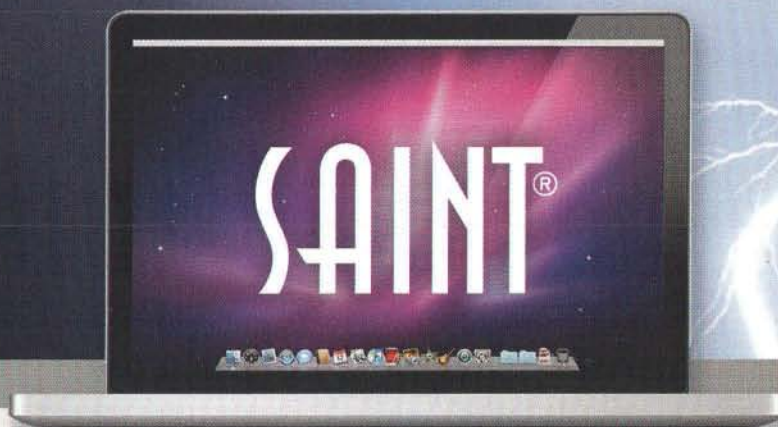
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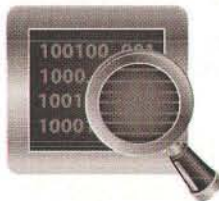
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MAC IN THE SHELL

by Edward Marczak

More Ruby Basics for IT

Useful Ruby for the Mac OS X Administrator

Introduction

Last month, we continued our look at using the Ruby language as a way for System Administrators to automate tasks and generally make their life easier. We started off with a sample program that copies a file to each directory under /Users on a system. This month, we have some refinements and additions to that script that will introduce a few new concepts, while keeping a practical example in mind.

Recap

If you missed last month's column, you really should go find it and read it! If you can't do that, let's recap where we are. Over the last few Mac in the Shell columns, we've been talking about Ruby for System Administrators: why it's a useful skill to have, why it's possibly the best choice, and how it can make your job easier. Specifically, we've been using MacRuby. MacRuby has had a version number increase since we started all of this, going from version 0.7 to 0.8, which fixes a few bugs. You should download and install MacRuby 0.8 from <http://www.macruby.org/downloads.html> right now if you don't already have it installed (and yes, if you have 0.7 installed from last month's column, go upgrade).

We set out with a simple task: copy a text file to all home directories under /Users. The first iteration of the code we came up with looked like this (Listing 1):

Listing 1: *dir_loop.rb*

```
#!/usr/local/bin/macruby

require "fileutils"
require "Pathname"

user_dir = "/Users"
the_file = "/var/messages/user_message.txt"

Dir.foreach(user_dir) { |x|
  the_destination = File.join(user_dir, x)
  if (File.directory?(the_destination)) &&
```

```
    Pathname.new(the_destination).basename.to_s[0] != '.')
    puts "Copying #{the_file} to #{the_destination}"
    FileUtils.cp the_file, the_destination
  end
}
```

If you're just joining in, fire up your favorite text editor, key in the code from Listing 1, save it as "dir_loop.rb" and let's continue.

Improvements

After running this code last month, we decided that there were two immediate improvements that we could (and should) make. First, this program just dies if it is not run as root, and we should at least warn someone that they need elevated privileges. Second, we wanted to have a way to specify that our user's home directories may not actually be stored at the path /Users.

The first case is easy to deal with. While there are a few way of handling this, there's one particular way that I find to be the most Ruby-like. The addition is one line, and simple to add. Add the following as the first line of the program, immediately following the **require** lines:

```
raise 'Must run as root' unless Process.uid == 0
```

The **raise** command raises an error. If there is no other code to handle this error, the program prints the error and stops. Also, note how the **unless** conditional is used as a *statement modifier*. This is a very Ruby-esque way of writing this line, as opposed to a separate *if* statement followed by the **raise** command. Now, running this program as a regular user results in the following output:

```
$ ./dir_loop.rb
/Volumes/homes/Users/germ/dev/rb/dir_loop/./dir_loop.rb:6:in
`<main>': Must run as root (RuntimeError)
```

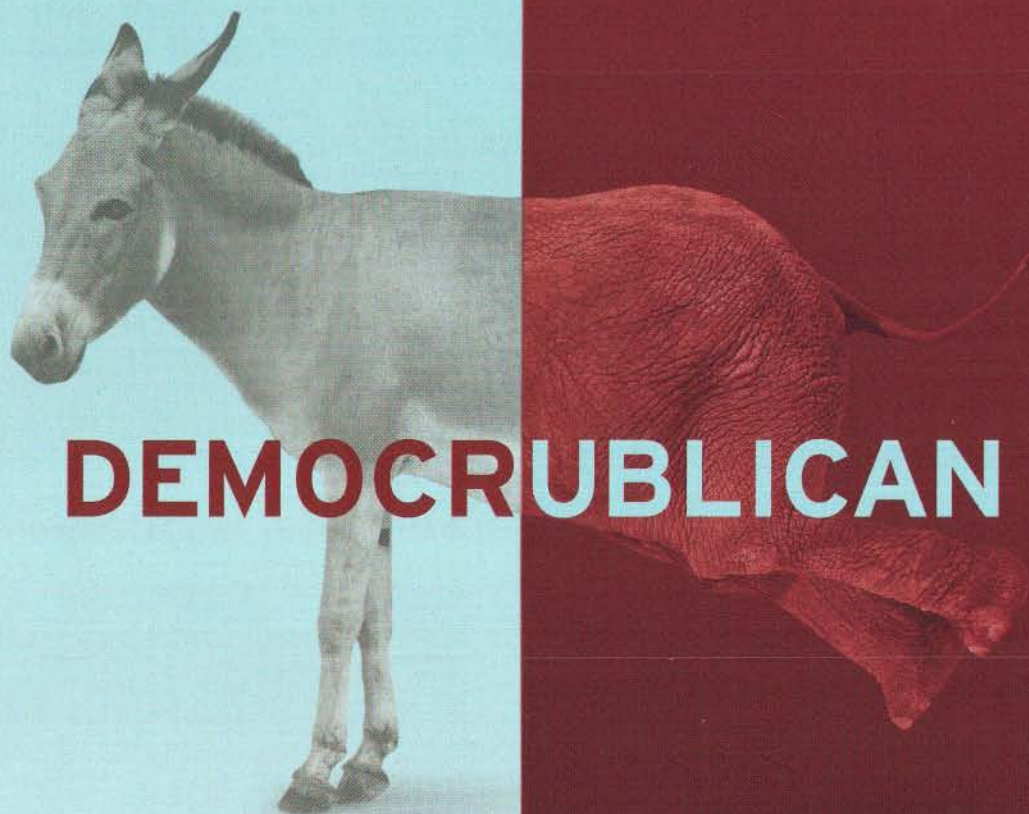
We can even clean this up further, but the **raise** command and error handling in general will be covered in greater detail in a future article.

Command Line Arguments

The second improvement can be handled through some error checking and by allowing the person invoking the program to specify where user home directories are located. Ruby has a really nice library for working with command line arguments called *optparse*. This month, we're going to look at the simple way of handling arguments.

A command line argument is simply the extra data passed into a program, specified at the command line. These are considered to be anything after the program's name, and these can be specified with or without a flag. So, in the following example, "one" "two" and "3" would be considered three arguments passed into the program:

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```
./program.rb one two 3
```

If you wanted all of those to be one, single argument, you could enclose them in quotes:

```
./program.rb "one two 3"
```

More advance uses often include a flag that specifies a value. This allows a program to not have to depend on the position of the arguments:

```
./program.rb -a one -b two -c 3
```

However, these are, effectively, 6 arguments. We'll leave this style for the future, and just deal with positional arguments.

Ruby handles arguments simply: each argument is stored in the global ARGV array. Unlike many other languages, Ruby stores arguments in ARGV starting with the first argument in position zero. If you're looking for the name of the program, you can find it in the global variable \$0.

To illustrate, Listing 2 shows a short program that prints out each argument entered.

Listing 2: argv_example.rb

```
#!/usr/local/bin/macruby
```

```
ARGV.each_index do|i|  
  puts "Arg #{i} = #{ARGV[i]}"  
end
```

Running the program in Listing 2 with arguments of "one", "two" and "three" produces this output:

```
$ ./argv_example.rb one two 3
```

```
Arg 0 = one  
Arg 1 = two  
Arg 2 = 3
```

So, how can we use this in our dir_loop.rb program that copies a file to each user home directory? We can use an argument to let the program know where to find the directory structure. Listing 3 contains the entire new program with our additions in boldface type.

Listing 3: The Updated dir_loop.rb

```
#!/usr/local/bin/macruby
```

```
require "fileutils"  
require "Pathname"
```

```
raise "Must run as root" unless Process.uid == 0
```

```
the_file = "/var/messages/user_message.txt"
```

```
user_dir = ARGV[0]  
user_dir = "/Users" if not ARGV[0]
```

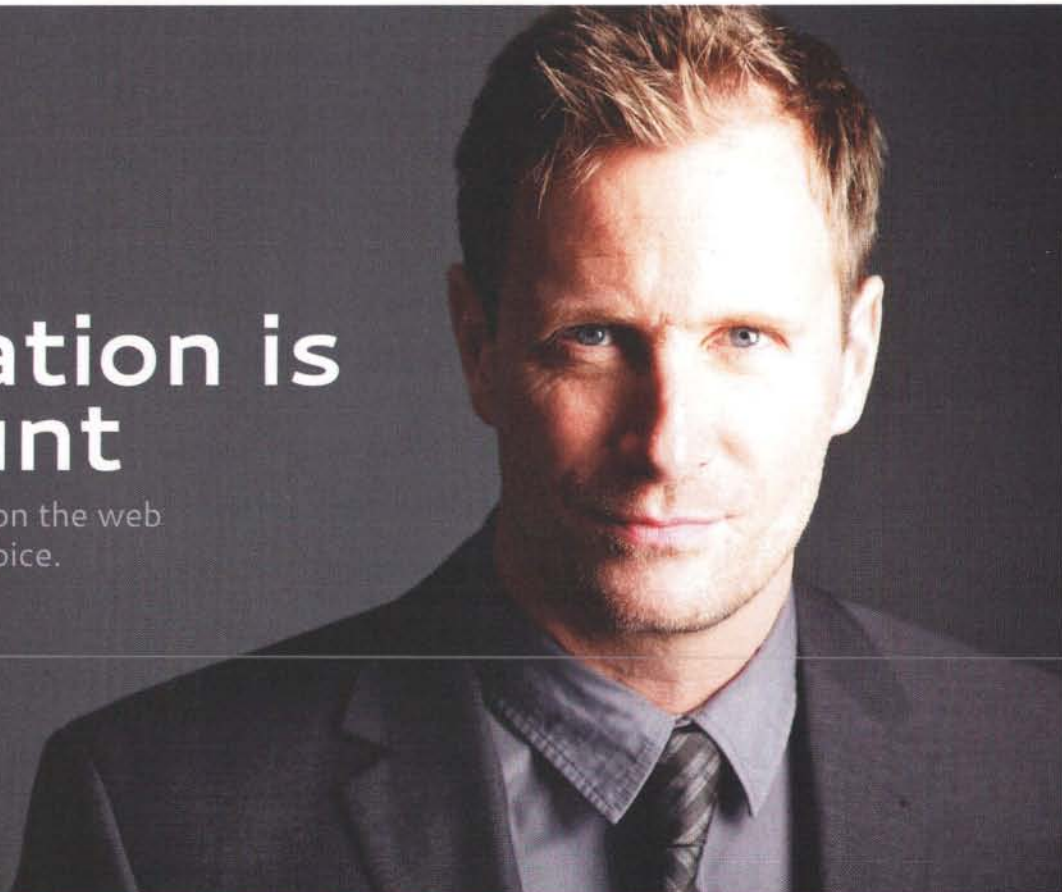
```
raise "#{user_dir} is not a directory or doesn't exist" if not  
Dir[user_dir]
```

```
Dir.foreach(user_dir) { |x|  
  the_destination = File.join(user_dir, x)  
  if (File.directory?(the_destination) &&  
      Pathname.new(the_destination).basename.to_s[0] != '.')  
    puts "Copying #{the_file} to #{the_destination}"  
    FileUtils.cp the_file, the_destination  
  end  
}
```

We could certainly have created a full if/then/end block, but the way I decided to handle this is a little more succinctly: plan on

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using ARGV[0] as the destination, but fall back to using /Users if nothing is supplied. We can even add in a sanity check to make sure whatever we plan on using exists and is actually a directory.

Conclusion

This was just another brief look at all that can be accomplished with Ruby and MacRuby. Getting the basics down now will pay off in the long run. As promised, next month, we'll look a little more closely at error handling.

Media of the month: "TRON: Legacy." If you haven't seen it, do so. If you haven't purchased the soundtrack, get it. If you do already have the soundtrack, but may have missed the original, I encourage you to check out the soundtrack from the original 1982 version. While some of it may be a little dated, the majority of tracks stand up to the test of time.

Until next month, get some more Ruby practice in on your own and don't be afraid to experiment!

MI



About The Author

Edward Marczak is the Executive Editor of MacTech Magazine and writes the monthly "Mac in the Shell" column. He co-founded the MacTech Conference and has authored several books about Macintosh technology.

Most recently, this includes Enterprise Mac Managed Preferences, published by Apress.

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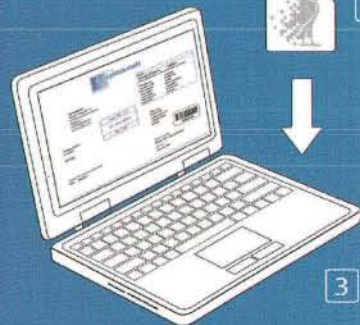


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Mac housecleaning for improved organization,
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by Ronald Gehrman

If you're reading this magazine, odds are you're knee-deep in Mac and iOS technology, perhaps as a system administrator or software developer. You are a highly organized and focused person who knows their way around the OS, and who gets things done quickly and efficiently.

At the opposite end of the tech spectrum are folks using their Mac or iDevice at home or at an office. They're not power users, they skim the surface and tread a few well-worn paths among their applications and files; they don't really know, nor do they generally want to know, what's going on "under the hood" — they want their machine to just work.

This column seeks to address the Mac tech that may typically or occasionally work with such "regular" users, and to help him or her understand some of the challenges involved.

We want to avoid situations where these two worlds collide, the tech helper seething with frustration about the home user who "doesn't get it," or the home user peeved at the tech helper who moves with such blazing speed that the user is left confused, angry and helpless.

When one approaches a home user with patience and an understanding of each individual's different styles of learning and using their Macs and iDevices, the work can be very rewarding. After working with many hundreds of individual users for over ten years, it still delights me when a client has an "AHA!" moment — they've grasped a crucial bit of information and made a quantum leap to greater creativity and computer empowerment.

As a provider of tech support or tutoring, it's important to present concepts and techniques in a language that the end user can understand, and to help them help themselves.

The call for help

You may hear an anguished cry of: "I can't find the files I'm looking for," or "My Mac is running much slower than it used to," or the classic "For the past month, I've been getting messages telling me I'm running low on disk space, but I just ignore them."

I explain that in the real world, objects take up space, and it's easy to see when too much stuff piles up on your desk, in your filing cabinet, or on your closet shelves. When you're tripping over stacks of junk on your floor, you know have a problem.

In the digital world, however, junk accumulates more quickly, invisibly, and insidiously. From the outside, a folder is just a folder, whether it contains ten items or a thousand. Visually, file icons all have the same dimensions and appearance, but one may represent a mere 5 MB of data while another weighs in at a whopping 5 GB.

Furthermore, even if an email inbox contains 5,000 messages, at any given time only a dozen or are two listed on the screen — the rest are out of sight, out of mind. Many users succumb to the Gmail effect: "I never need to delete an email or file again. I've got more storage than I'll ever need, and I can use search tools to find what I want."

While it's true that hard drive capacities are continually increasing, the amount of data stored by users is ballooning as well, and will probably always expand to fill the available space.

Often, a user doesn't realize too much stuff is cluttering up their Mac until, for example, they can't locate files because they're scrolling through endless lists, or because Spotlight presents them with multiple copies/versions of a file.

Or a user may not know their hard drive has almost run out of space, affecting performance and stability, and risking data loss. One of my clients for months put up with a sluggish Mac, and even with images randomly disappearing from his iPhoto Library, before he sought help and I pointed out that only several megabytes of space remained on his 160 GB hard drive.

Bottom line: not paying attention to data/craft overload can cause all kinds of productivity problems and stability issues, and jeopardize the integrity of user data.

Stemming the tide

Cleaning house is not a "sexy" computer task, but after explaining to my clients the potential problems of data overload, and the benefits of dealing with it, I show them how and where data grows like weed trees, and how to prune it back.

Here are some areas where a little bit of organization goes a long way. This is by no means a comprehensive list and not in order of importance — it's just what I generally try to work on with my clients.

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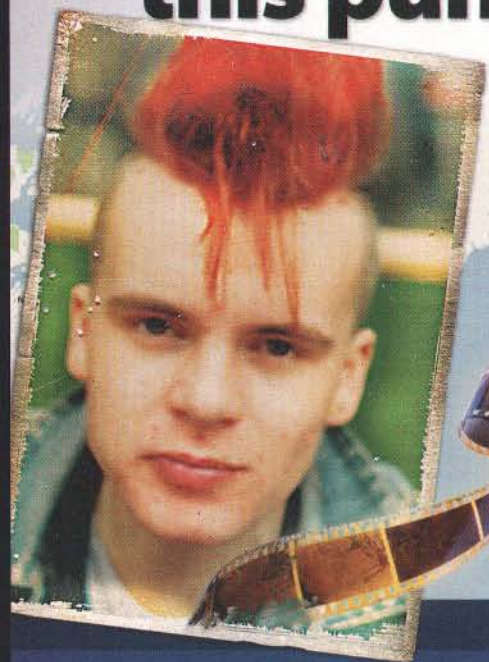
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* Steve "Scotty" Scott

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Email

Many users are so overpowered by the email onslaught that they just give up and ignore the problem. I often see inboxes containing thousands of messages, many of them unread, stretching back months or years (also, see the section on Email Attachments below).

I encourage my clients not to view their email inbox as a bottomless pit that never needs to be shoveled out. Instead, when a message appears, try your best to act upon it, i.e. either read and reply to a message, file it away, or delete it.

Continually tweak the junk mail filter to trap more garbage, and also to prevent legitimate messages from getting incorrectly labeled as spam.

Create rules to send incoming mail to appropriate folders by project, sender, subject — whatever makes sense.

If you find yourself inundated with bulk mail from legitimate senders, rather than ignoring or deleting those messages over and over again, simply use the sender's unsubscribe options. Sure, those options aren't always easy to navigate, but finding and flicking that "off" switch is time well spent.

To quickly delete batches of unwanted email, click column headers in the message list to sort by sender, subject or date, as needed.

If you want to keep years and years worth of email, archive messages into folders by year or by project.

Email Attachments

On my clients' Macs, I frequently find the email downloads folder cluttered with hundreds of files, many of them as multiple copies, because an impatient user will click to download the attachment, not see any visible progress, and then click again. Other times, a user will revisit a specific email message several times, and re-download an attachment over and over again.

Many users only understand that a file has been downloaded from an email if they see it on their Desktop, but files are generally placed in locations such as

~/Library/Mail Downloads
~/Documents/Microsoft User Data/Saved Attachments

where the user may seldom look. To give my clients easier access to these folders, I create aliases in the Finder Sidebar.

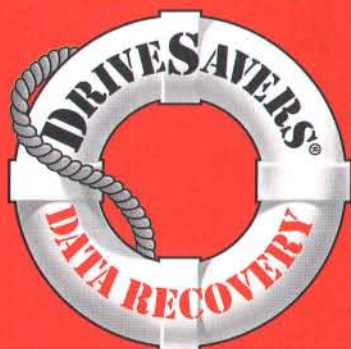
Some users have a hard time distinguishing between messages in their email application (or webmail) and documents in their Finder hierarchy, so I explain the difference between opening a file directly from within an email, or instead saving the attachment to a desired Finder location and opening it from there.

I urge my clients to regularly visit their email downloads folder and review, file, delete as needed.

Web Downloads Folder

What's true for email downloads applies here as well, with the additional nuisance of installers (.dmg, .zip, .pkg, etc.) kicking around.

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We've all seen it: the Skype or Firefox application running from the disk image, created by the .dmg file, perpetually ejected and relaunched because it's been set as a login item.

The process of downloading and installing an application is very confusing to the home user, and I offer the comparison that the .zip or .dmg file is like the packaging for your application, which means you can generally delete it after installing the application.

I expect this will change significantly with the advent of the Mac App Store, when — as in iOS — installations will leave everything nice and tidy.

iPhoto

Many of my clients are bogged down with thousands or tens of thousands of photos, and I implore them: Sure you love your kids or your car or your vacation, but do yourself a favor! Immediately after importing photos from your camera, speed through that most recent batch and delete any photo that's not completely amazing. Then leave your photos alone for a day or two, then come back and cull more of them in a second and perhaps third pass.

Also, a utility like Duplicate Annihilator is great for finding and deleting multiple versions of files caused by a user inadvertently importing files repeatedly.

Because of how iPhoto works, it's important to note that to really delete photos, they need to be deleted not from Albums, but in the Library, in Events or Photos.

Another major issue with is that after images have been imported from the hard drive into iPhoto, the originals can be deleted. What's difficult is if a client still has many folders of original images kicking around in the file system, and there may be some doubt as to whether they've made it into the safety of iPhoto. In that case, it's important to do careful checking to avoid deleting important images.

It's also important to remind the user that they won't really regain disk space until they empty iPhoto's own Trash.

iTunes

After you've seen a movie or TV show, ask yourself whether you really need to keep it.

It's probably a good idea to root out any old iOS apps you're no longer using, especially if they take up lots of space.

Desktop

One of my clients for months saved all of his files to the Desktop, resulting in a nearly impenetrable thicket of icons scattered about.

A special hazard of desktop file clutter is that icons pile up on top of each other, so that you sometimes can't tell if a pile is ten or a hundred deep.

And then the fact that when a new file is created by an application, it's anybody's best guess as to where that file will be place on the desktop, so the fewer files, the better the likelihood that you'll find it.

My favorite technique to help clients get a handle on such a Desktop disaster is to open a Finder window and display the

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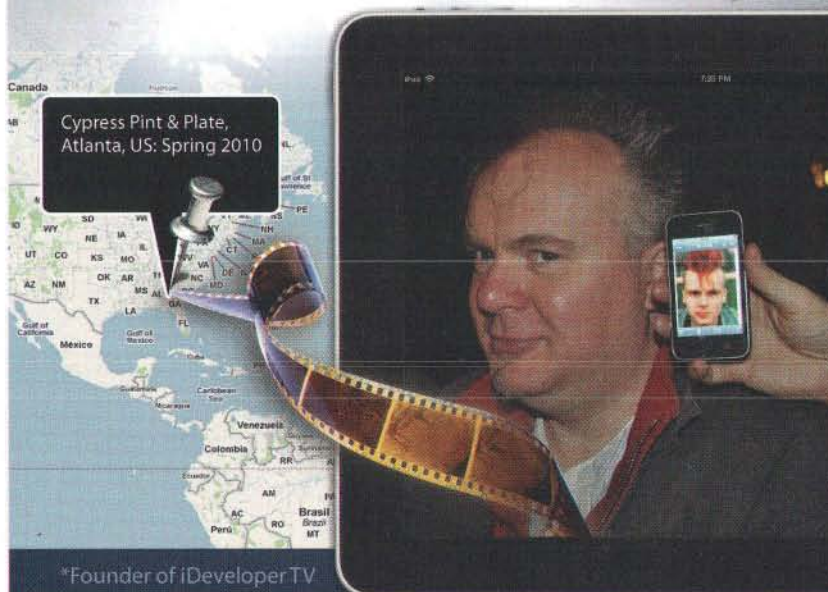
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contents of the Desktop in list view, then click the Kind column header and move different types of files into new folders, e.g. JPGs, PDF, Word, Excel, URL, and so on.

Finder Trash

Don't let too many files accumulate there, because when it comes time to emptying the trash, it's always a good idea to review the items to make sure they can really be permanently deleted. Reviewing files is a lot easier, and less prone to accidental deletion, if you're dealing with 30 files instead of 300.

File system

At some point, a home user may have clicked the wrong location in a save dialog, or selected the wrong default location for storing files, and important files may be ending up in the Applications folder, or text documents in the Pictures folder.

From time to time, I take my home users down the root level of their Mac HD and we work our way through the folders to make sure we locate and move files as necessary.

Files left over from PC migration

Use spotlight to find and delete any .exe files, aliases, thumbs.db, and other Windows files that are not usable on the Mac.

There may also still be leftover folders full of images — check to see whether they're already in iPhoto.

Conclusion

I believe that organization is nine-tenths of the battle. To most users, a regular regimen of digital house cleaning is not a fun task, but I explain that spending even a few minutes each day on cleanup (review, file, delete), will make them more productive and creative and happy with their Mac. Just show a user how you consolidated hundreds or thousands of files into a more manageable group of folders, demonstrate how the free space on their hard drive grows as items are deleted and the Trash is emptied.

As with the proverbial horse and water, sometimes you can lead a user to a list of best practices, but you can't make them stick to it. However, with patient persistence, progress is made; the tech helper and home user can bask in the glow of a successful session.

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About The Author



Ronald Gehrman (help@metromacsupport.com) has been a devoted Mac geek since 1988, using the platform as a desktop publisher, web designer, translator, and photographer. He joined the Apple Consultants Network in 2002; as an Apple Certified Support Professional he provides on-site and remote support and tutoring to Mac and iDevice users in New York City and beyond.

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DEVELOPER TO DEVELOPER

by Boisy G. Pitre

Making a Splash

Bring some pizzazz to your Cocoa applications with a splash window

Introduction

As developers, we're always looking for *lagniappe* (an expression we have here in South Louisiana for "a little something extra") to add to our applications in order to make them stand out. One design element that can help us to do just that is the inclusion of a splash window (a.k.a splash screen). It only comes up for a brief moment, but for users of our software, a splash window can give Cocoa applications that extra sleek and professional look. It's a way for your users to quickly be reminded of your application's presence during launch, and can establish your application's design and motif right from the get-go. In this month's *Developer to Developer*, we'll look at how to put together a splash window and create an application that displays it upon start up on your Mac. It's easier than you might think.

To Splash... Or Not...

Before we jump into the idea of incorporating a splash window into an application, let's first consider its appropriateness. Although a splash window can look nice and exude class, it is not necessarily the right thing for every desktop application. Small utilities that launch quickly, especially single-window applications, are probably not good candidates for a splash window. Typically it is the larger, more robust applications that can benefit from having a splash window, especially if the application needs a little time to load up before running.

Contemplating The Content

While the exact content of a splash window can be debated, it should usually contain a nice graphic with the title of your application, its icon, and some copyright information. You should also include the version of the program,

something that is readily obtainable from its own Info.plist file.

The dimensions of your splash window can vary, but should be a nominal size. If it is too large, it takes up an inordinate amount of space on the user's screen and becomes an annoyance. If it is too small, the user may miss it for the time that it appears. Since most modern Macs have high screen resolutions, a 400x400 pixel splash window, or something slightly larger, is adequate. You should feel free to experiment with the size, and find something that is right for your application.

Should your splash window be exactly square? Not necessarily. Depending upon your application's title and content, you could go for a rectangular shape either in the horizontal or vertical direction. Again, it's all in what the content of the splash window will be, as well as the message you're trying to convey to the user at the application's launch.

Creating The Window

Since the splash window is the first thing that users will see when your application is launched, it warrants spending some time to create attractive and compelling content. This is where a professional graphic application like Photoshop is necessary. Using such a tool, you can put together layers of background, images and text, adding various effects, to create a great looking splash window. Often a nice gradient background is a good place to start, and things can progress further from there. In our sample application (available at ftp.mactech.com), a starter splash window is provided in a Photoshop .psd for you to experiment with. Feel free to use this as a starting point.



Figure 1. Our example splash window graphic at startup

With the actual graphic content created, how does one place it into a window? Let's look at the source code for our example project, appropriately named "Splash."

Code Organization

Our sample application, Splash, has a single "main" window and a splash window that appears for a short duration (currently set to 2 seconds). Build and run the application. You will see the splash window appear and disappear. As soon as it goes away, the main window appears and the program runs.

Listing 1: Methods in the SplashAppDelegate class

```
- (void)splashWindowDidClose:(id)sender;
{
    [window makeKeyAndOrderFront:sender];
}

- (void)applicationDidFinishLaunching:(NSNotification
*)aNotification
{
    SplashWindowController *splash =
    [SplashWindowController new];
    [splash setDelegate:self];
}
```

Let's start out looking at the code by examining the SplashAppDelegate.m file. All AppKit based applications begin life in the applicationDidFinishLaunching: method. It is here that we allocate a new instance of the SplashWindowController object, which controls the entire life cycle of our splash window. We also set ourselves as the delegate for this splash window controller and implement the splashWindowDidClose: method above. We do this

because our application may be interested in doing something specific once it knows that the splash window has gone away.

Let's move on to the splash window code. There are two classes and a .xib file that make up the splash window portion of this application: The first class, SplashWindow, is subclassed from the NSWindow class, and contains a single method: initWithContentRect:styleMask:backing:defer: This method sets up the window to have no border and to be centered on the screen.

The window controller class, SplashWindowController, is subclassed from NSWindowController and overrides that class' initWithWindowNibName:delegate: method. This method obtains the CFBundleShortVersionString and CFBundleVersion values from the Info.plist file and creates a version string that will later be assigned to the NSTextField located in the .xib file. The splash window is then shown with a call to showWindow:.

Listing 2: The init method in the SplashWindowController class

```
- (void)timeToClose:(NSTimer *)timer;
{
    [self.window close];
    [_delegate splashWindowDidClose:self];
}

- (id)init;
{
    return [self initWithWindowNibName:@"SplashWindow"];
}
```

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```

}

- (id)initWithWindowNibName:(NSString *)windowNibName
delegate:(id)delegate;
{
    if (self = [super initWithWindowNibName:windowNibName])
    {
        _delegate = delegate;
        NSString *shortVersion = [[NSBundle mainBundle]
objectForInfoDictionaryKey:@"CFBundleShortVersionString"];
        NSString *version = [[NSBundle mainBundle]
objectForInfoDictionaryKey:@"CFBundleVersion"];
        versionString = [[NSString stringWithFormat:@"%@"
("%@"), shortVersion, version] retain];

        [self showWindow:self];
        closeTimer = [NSTimer
scheduledTimerWithTimeInterval:SPLASH_WINDOW_TIME
target:self selector:@selector(timeToClose:) userInfo:nil
repeats:NO];
    }

    return self;
}

```

With the splash window now appearing, a timer is created and attached to the runloop. The method `timeToClose:` will fire after 2.0 seconds (defined by `SPLASH_WINDOW_TIME` at the top of the source file), at which time the window controller closes the splash window and calls the delegate (our application delegate) to inform it that the splash window is no longer showing. Our delegate method, located in `SplashAppDelegate.m`, instructs our main application window to appear, and we are off and running as normal.

It is worth noting that we can have our application's main window appear along with the splash window if we so choose, by simply moving the `makeKeyAndOrderFront:` method into our `applicationDidFinishLaunching:` method. It's all based on how you want your application to behave.

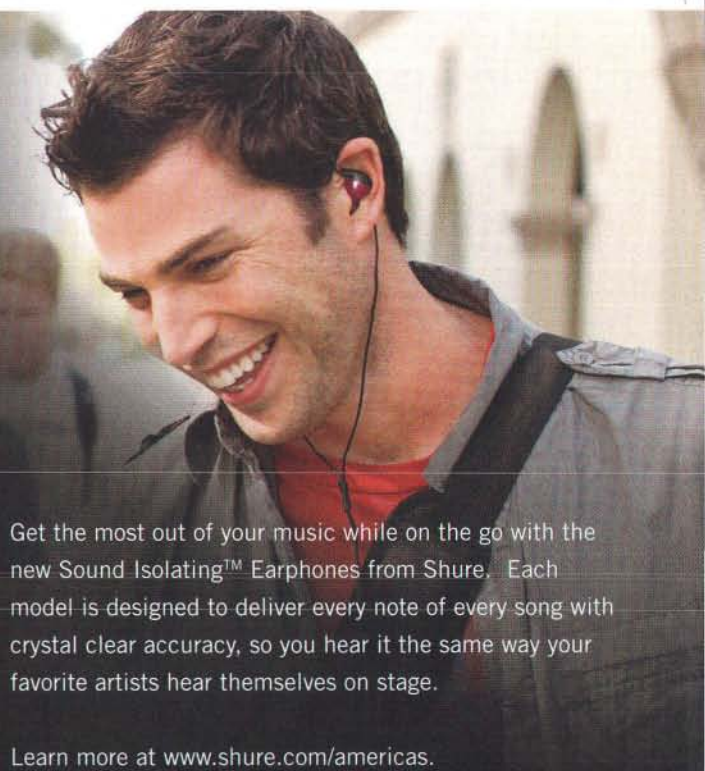
Peering Into The XIB File

The `SplashWindow.xib` file contains a single window whose content view contains an `UIImageView`. That image view is configured to use our `Splash.psd` image, which is part of our project. While our copyright information is embedded as an `NSTextField`, there is another `NSTextField` just above whose contents is programmatically assigned to hold the version number of our application. When the `SplashWindowController` comes to life, it holds a reference to this object and sets its contents from information in the application's `Info.plist` file. So the user can see, at a glance, what version of the software is running.

Summary

Splash windows bring an extra level of professionalism and presentation to a Cocoa application. Take some time and effort to create a compelling splash window. Also, timing is important. A splash window needs to stay up long enough for the user to determine a little about the application, but not so long that it becomes an annoyance. Get the message (the

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splash window) across to your user, then bring them to the main attraction (the main application window(s)) within a reasonably short period of time.

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<http://www.cocoa-dev.com/index.pl?NSWindowController>



About The Author



Boisy G. Pitre lives in Southwest Louisiana and is the lead developer at Tee-Boy where he also consults on Mac and iOS projects with a variety of clients. He holds a Master of Science in Computer Science from the University of Louisiana at Lafayette. Besides Mac programming, his hobbies and interests include retro-computing, ham radio, vending machine and arcade game restoration, and playing Cajun music. You can reach him at boisy@tee-boy.com.

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HEAD-TO-HEAD:



Parallels Desktop for Mac

VS.

VMware Fusion

How do VMware Fusion 3.1 and Parallels Desktop 6 for Mac compare?

by Neil Ticktin, Editor-in-Chief/Publisher

Why Virtualization?

In 2005, Apple announced the switch of the Mac platform from PowerPC to Intel processors (the first Intel-based models were available in early 2006). This introduced some interesting opportunities for the Mac, including the ability to run operating systems *other* than Mac OS X on a Mac. This includes not only your everyday Windows 7 or XP, but also other Windows OSes, including 64-bit versions, and a wide variety of Linux and other OSes.

You may already understand your options for running Windows on a Mac, but in case you don't, your first choice is to decide between Apple's Boot Camp, and a virtualization product like VMware Fusion, or Parallels Desktop for Mac. With Apple's Boot Camp, you can run Windows natively, but you have to reboot every time you want to switch between Mac OS and Windows. In addition, you can only use one OS at a time. Despite a speed advantage for some things, that's not particularly convenient. For that reason, *MacTech* recommends a virtualization product for most users.

Virtualization gives "switchers" (those switching from Windows to Mac) more comfort because they can use their old applications; and more easily get to their old data. It gives all Mac users the ability to use some critical piece of software not available on the Mac. For example, your job may require you to run Internet Explorer, an older version of Outlook, or some other software that your corporate systems support. Of course, you may simply want to play a Windows game not available on the Mac.

With virtualization, like you'll see in Parallels Desktop for Mac or in VMware Fusion, you can run Windows alongside the Mac OS, getting the best of both worlds. For many, this may mean running Windows in a "window" on your Mac. Both VMware Fusion and Parallels Desktop also have the ability to run Windows applications even more transparently or full screen, but we'll leave that for another discussion.

Your final option is to use Parallels Desktop for Mac or VMware Fusion to access/use your Boot Camp volume rather than a virtual hard disk. This gives you the option of sometimes

booting Windows natively, and other times, using the volume for virtualization. As the performance of doing this improves, this has become a real option for users.

The Big Question

So which virtualization product do you go with? Which solution is faster? Should you run Windows XP or 7? 32-bit or 64-bit? One virtual processor or more? In short, there are different answers for different people: it all depends on your needs. More and more, virtualization can do whichever is best for you.

To tackle this problem, *MacTech* has once again undertaken a *huge* benchmarking project. We often wait for a patch or two after major upgrades to give time for major new versions to shake out. This is similar to the virtualization benchmarking projects that *MacTech* undertook in past. In both cases, as with other *MacTech* benchmarks, we tested performance of the types of things that everyday users typically do. In this case, it was not just testing the raw performance of the Windows OS, but also commonly used Windows applications. Like last time, based on reader feedback, we paid a lot of attention to 3D graphics and gaming.

The goal was to see how VMware Fusion and Parallels Desktop performed, covering both Windows XP and Windows 7. Furthermore, we wanted to see some of the differences with different Mac models, multiple processors and check for issues with 64-bit versions of Windows.

To be clear, this article is *not* a product review; it's a benchmarking analysis. The article's purpose is to assess performance (including issues we found if something didn't work right), and not product features, user interface, etc... You should use your assessment of features, user interface, and support in conjunction with the below benchmarking results to make your product choice.

Before you ask why other solutions and products were not included, let's answer that. This benchmark project is already huge with several thousand collected data points crossing two

guest OSes (Windows XP and 7), four models of computers, virtual hard disks and Boot Camp volumes, and over 50 tests each run 3-5 times for most of the environments. There were *several thousand* tests to be completed, many with a stopwatch. *That's all before a single word of this article is written!* To add even *one* product would increase this huge test matrix by 50%. As a result, we focused on the two leading commercial virtualization products that come with support. These two products also have free trial versions that you can compare against other solutions so you can try them for yourself and compare them alongside any other solution you want at any time including before you buy.

One thing to note, however, is that open source and other free products may not be for everyone, especially non-technical users. For many, these offerings can be difficult to understand and install, and they do not have technical or product support behind them. Obviously, users can reach out in forums and the community, but if you don't understand something, you won't be able to pick up the phone and call support the way you can with a commercial product. If that works for you, great. If not, as is the case for most users, then a commercial product is likely your solution.

In fact, the testing took long enough that during the course of preparing these tests, both Parallels and VMware released additional minor updates.

The Test Bench

When we were choosing computer models, we set out to choose the current models of Macs giving a good representation of what most people may have. Certainly, the faster models of these computers will perform even better.

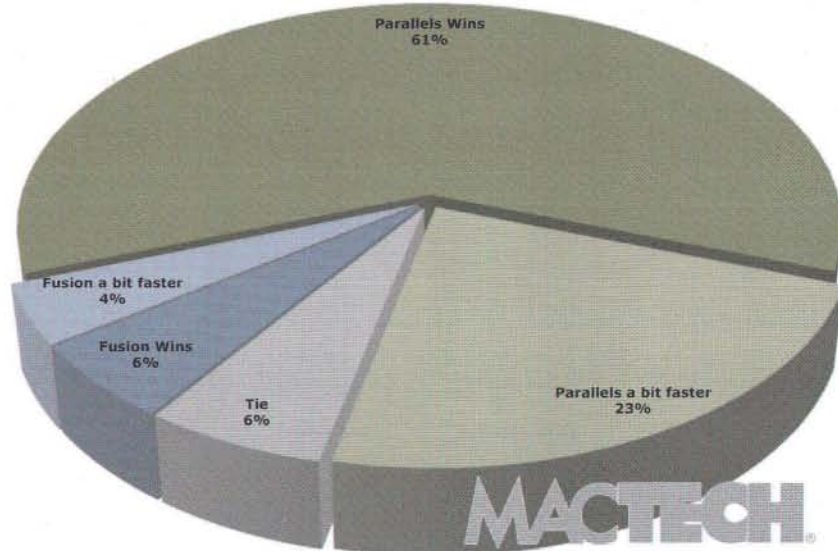
We chose four Mac models to compare alongside each other: the "White" MacBook, MacBook Pro, iMac, and Mac Pro.

- **2GB MacBook**, Intel Core 2 Duo processor ("White MacBook")
Specifically: MacBook 2.4GHz 2GB/250GB White Unibody (May 2010)
- **4GB iMac**, Intel i3 processor
Specifically: iMac 27in 3.20GHz i3 4GB/1TB/5670
- **4GB MacBook Pro**, Intel i5 processor ("Unibody MacBook Pro")

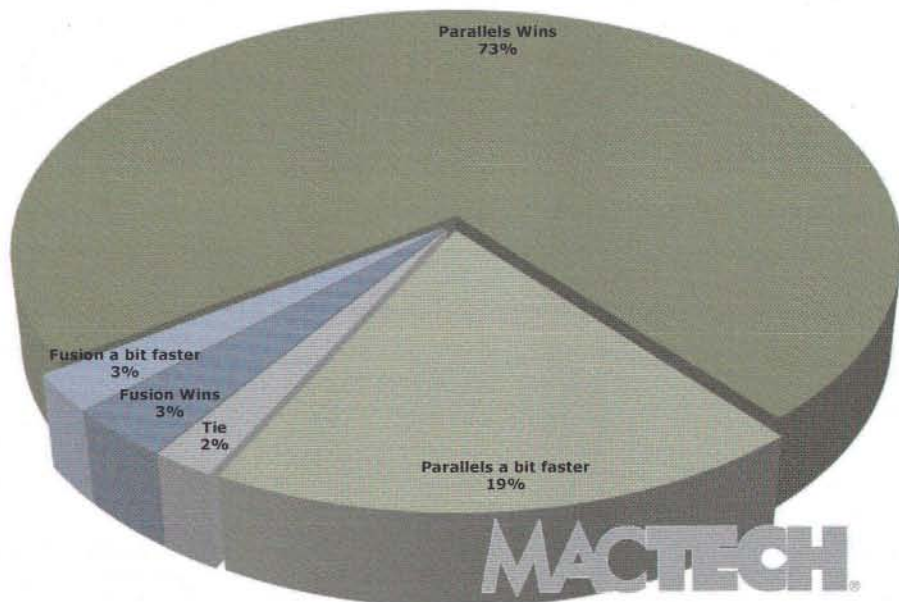
Specifically: MacBook Pro 15.4in 2.53GHz i5 4GB/500GB

- **6GB Mac Pro**, Quad-Core Intel Xeon processors
Specifically: Pro 8-Core 2.4GHz 6GB/1TB/5770

Memory for virtual machines can be configured with a wide array of settings. As a general rule, VMware Fusion's default memory for each configuration (of physical RAM and "guest" OS) was the same or lower than Parallels Desktop (although sometimes it was higher). As a result, we let VMware's default guide the way, and set Parallels Desktop to the same as whatever



Test Tally: General Virtualization Tests



Test Tally: 3D Graphics Tests

All times in secs unless otherwise noted

177

1614

Colored Cell Worksheet Overview: Virtual Hard Drive

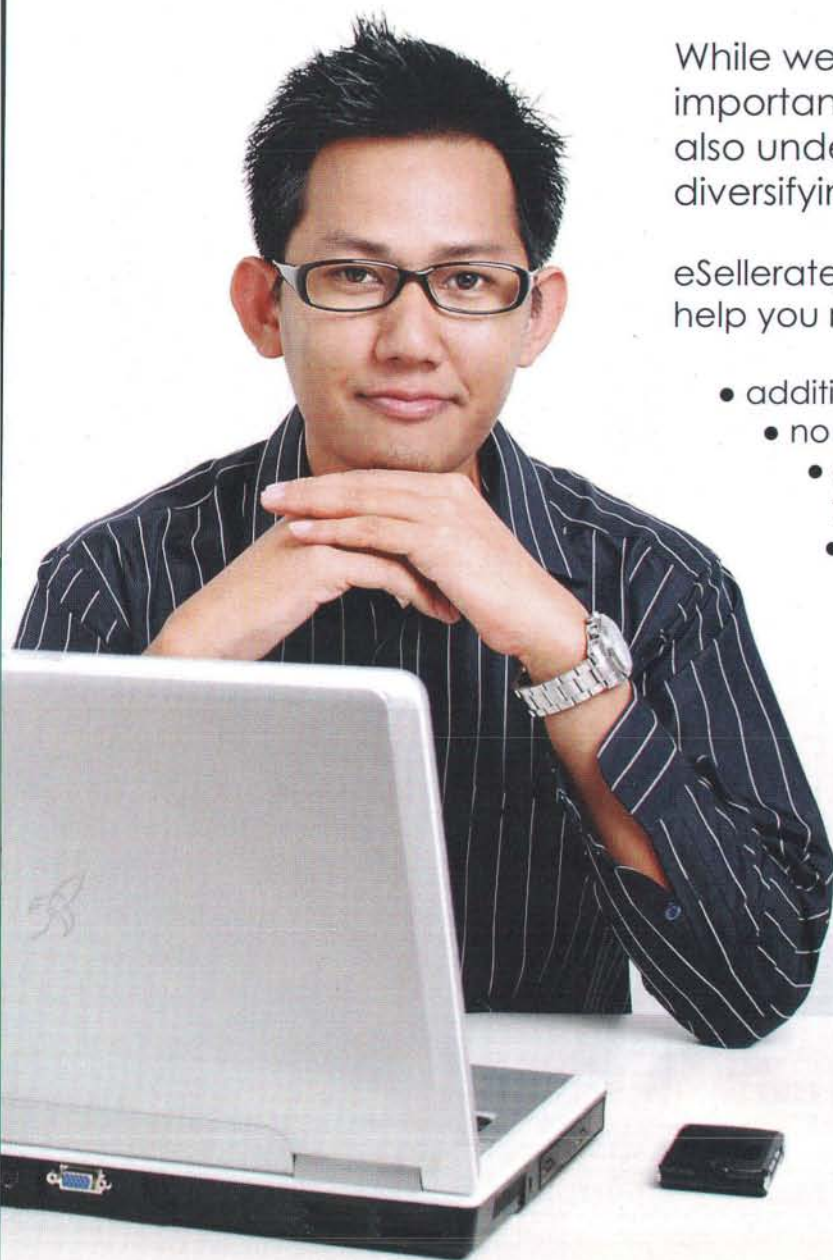
The tests compared VMware Fusion 3.1.1, with Parallels Desktop for Mac 6.0.11828.615184, running Mac OS X 10.6.5 with all updates. All required Windows updates were installed for each version of XP and Windows 7.

We won't keep you in suspense. When we look at the "big picture" of all the testing, Parallels is the clear winner. If you count up the general tests (including one 3D graphics score), Parallels won 61% of the tests by 10% or more, and was also a bit faster on an additional 23% more of the tests. In other words, Parallels Desktop 6 beat VMware Fusion 3.1 in 84% of the general tests we ran.

Overall, VMware Fusion won 6% of the tests by at least 10%, and was also a bit faster on an additional 4% more of the general tests. For the 3D tests, VMware Fusion won 3% of the tests by at

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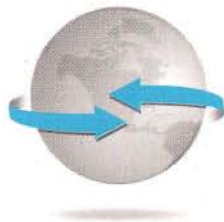
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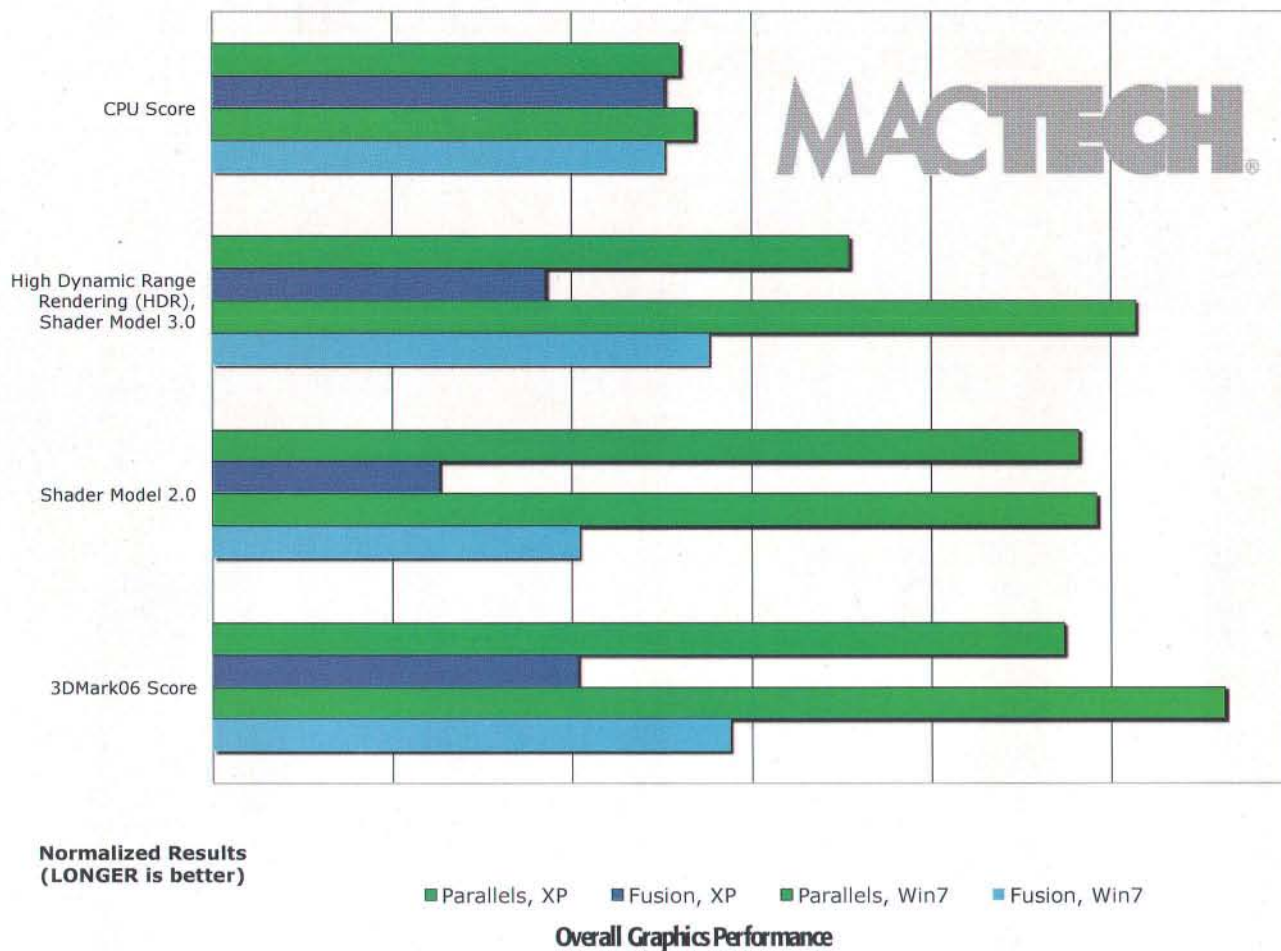
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3D Graphics Tests

We're always on the lookout for new ways to measure graphics in particular. And this time, again, we did look at some of the results of other benchmark suites, and found that their assessment of graphics was so clearly wrong. For example, Performance Test 7.0 gave results showing 3D graphics at double the speed, when we could clearly see visually that 3D was closer to half the speed.

As a result, we again used 3DMark06 (version 1.2) by FutureMark. 3DMark06 is a globally recognized and comparable measurement of the 3D performance. Gamers use 3DMark as way to test their machines and tweak them for performance. See <http://www.futuremark.com/> for more information about 3DMark06.

This time, we also experimented with FRAPS to see how it would rate the frames per second rates for 3DMark06 tests (which 3DMark06 also reports). FRAPS reporting, and 3DMark06 reporting, were nearly identical, giving us additional confirmation of this being the right tool for the job of assessing 3D Graphics performance.

3DMark06 has three main aggregate scores. The most important of which is the "3DMark Score." In addition, SM2.0 Score measures 3D Shader Model 2.0 performance, and the

HDR/SM3.0 Score measures the 3D Shader Model 3.0 & HDR performance.

Clearly, if you are going to play games and be serious about it, then running in Boot Camp is your best choice running Windows natively. However, Parallels Desktop is fairly close and of course, you don't have to reboot with a virtualization solution, deal with driver issues, and more. VMware Fusion 3.1 continues to have problems rendering 3DMark06 tests, and in the case of the MacBook Pro simply wouldn't work (in fact, it often corrupted the virtual machine).

Without a doubt, Parallels Desktop's greatest advantage over VMware Fusion is in 3D graphics. Not only is the speed difference huge (Parallels Desktop is often double or more the speed of VMware Fusion), but the quality of graphics we saw in the 3DMark06 tests as well as actual game play is far, far better.

Additional Conclusions

There are additional conclusions that we can extract from the results as well. Specifically, we looked at the differences between XP and Windows 7, as well as multiple virtual processors and using a Boot Camp volume.



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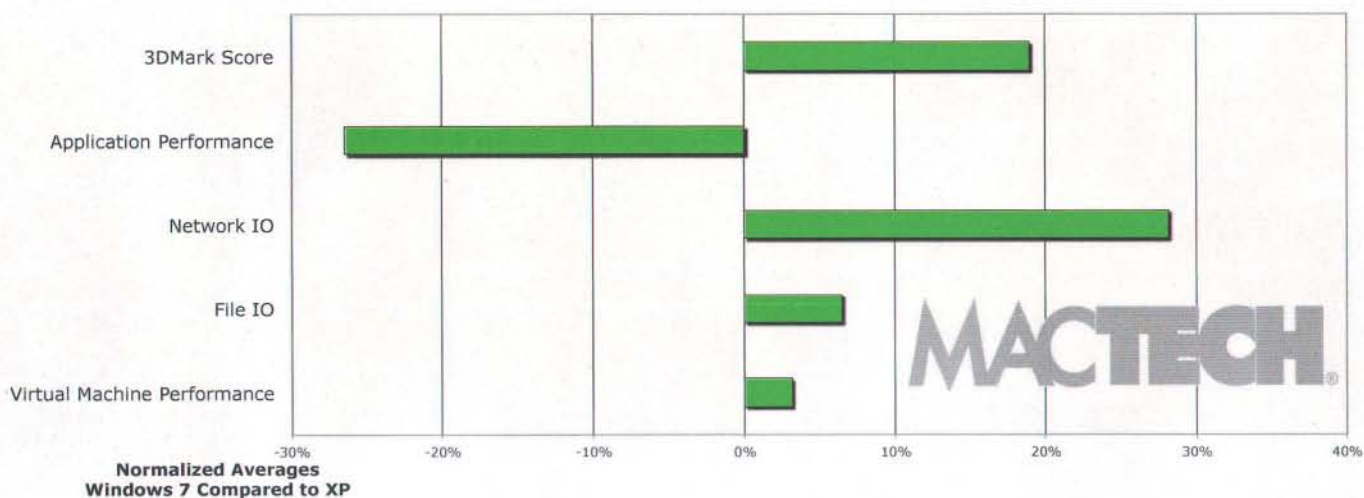
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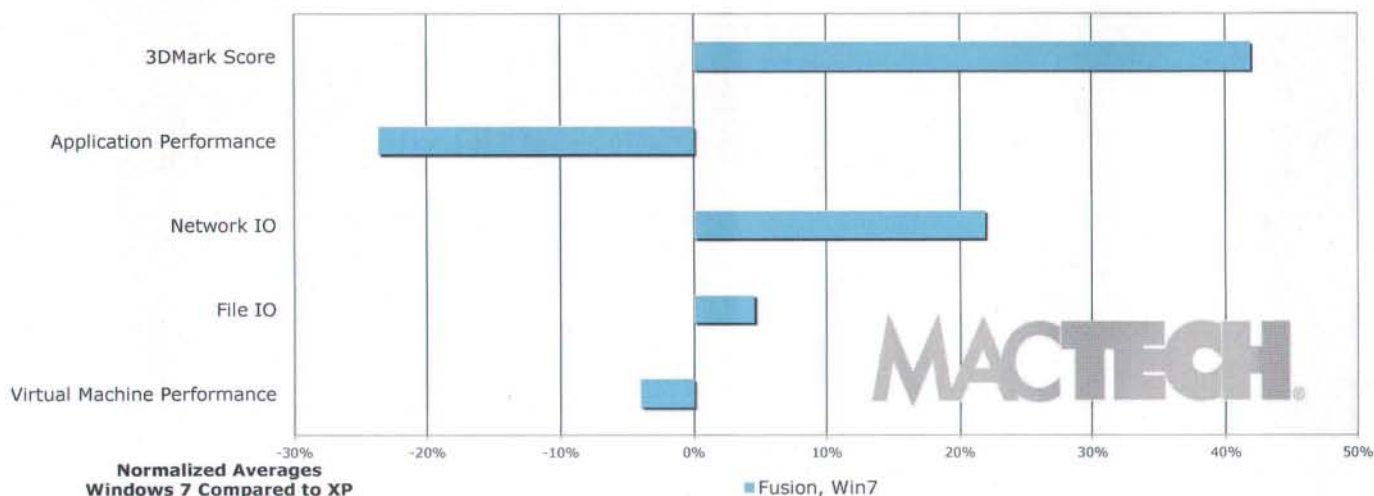
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Parallels Desktop 6: Windows XP vs. Windows 7



VMware Fusion 3.1: Windows XP vs. Windows 7

XP vs. Windows 7

Right from the beginning, things just felt better running under Windows 7. Part of this is a more modern interface, but for the most part, things just felt snappier. I/O was faster, graphics worked better in both products, etc. The whole experience just made you want to run Windows 7 over Windows XP.

We wanted to see what some of the benchmarks did, and normalized a number of scores so that we could compare them. With the exception of application performance, which was still quite good, Windows 7 helped things run better and faster for both Parallels Desktop and VMware Fusion.

In previous virtualization benchmarking projects, there were significant differences between running Microsoft XP vs. Vista, or XP vs. Windows 7. At this point, *MacTech* recommends that unless you have a driving reason to use XP (like application compatibility), you should move to Windows 7. Of course, no one should be using Windows Vista.

64-bit

There's a big marketing push right now for 64-bit. We did not measure 32-bit specifically against 64-bit during these benchmarks, but we did use a 64-bit version of Windows 7. While most users still don't need the additional address space that 64-bit brings, we no longer see any penalty to running 64-bit. As a result, especially if you are moving to Windows 7, you should probably move to the 64-bit version unless there's some specific reason not to.

Multiple Virtual Processors

There's a lot of "bragging rights" that encircle using multiple virtual processors under virtualization. In earlier versions of Windows, there were licensing issues that created artificial limitations. Today, especially with Windows 7, it's different.

Depending on the test, and whether XP or 7, sometimes Parallels was faster, and other times VMware. The most significant difference was with the launch and a full Windows boot where Parallels was noticeably faster (shorter bars are better).



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- ✓ **WORK YOUR WAY**
Create a digital world, powered by your own voice.
- ✓ **BUILT FOR MAC**
Dragon Dictate for Mac gives you the experience you expect from your favorite Macintosh applications. And Dragon Dictate for Mac works with your favorite Apple applications, including Mail, iChat, iCal, TextEdit, Pages, Safari and many more.



In virtual machine performance with two virtual CPUs, we saw fairly predictable results. File duplication tests were split: VMware won under XP, and Parallels won under Win7. Compression tests were also split, but fairly close regardless. Launch virtual machine time, however, goes again to Parallels with noticeably faster full Windows boot times.

For graphics, similar to what we saw with a single virtual CPU, Parallels was faster across the board when using two virtual CPUs.

These days, the decision is fairly simple. *If* you have an application that can make use of multiple virtual processors, and this includes 3D Graphics, and your Mac has enough horsepower, then you should use them. Otherwise, it's not necessary.

Then again, if speed is that important to you, you should be asking yourself about whether to run the app native on your Mac instead of in a virtual machine. Sometimes, like for CAD, you may not have an option.

Graphics performance with two virtual CPUs became even more pronounced, especially under Windows XP where Parallels Desktop was 3-4x faster than VMware Fusion. VMware Fusion scored considerably better on graphics tests under Windows 7. That said, Parallels Desktop continued to be faster there as well.

Running on Boot Camp Volumes

One option users have is to be able to switch back and forth between Boot Camp and virtualization. The way this works is that you install Boot Camp, as you normally would, and then you setup either Parallels Desktop or VMware Fusion to access that volume instead of a virtual hard disk (the default setup).

When running the virtual machines, Parallels outperforms VMware Fusion in performance when they are accessing a Boot Camp volume. While we didn't benchmark it because it's something a user only does once, VMware Fusion's setup time is considerably less than Parallels. Both products, especially when dealing with driver issues for iMacs that come with Bluetooth keyboards, are significantly easier to set up than if running Boot Camp natively.

When it comes to running virtualization solutions off a Boot Camp volume, the virtual machine performance is the most relevant. Across the board, Parallels was again faster here, and in launching the virtual machine with a full Windows boot, it was noticeable from a user experience point of view.

Graphics running on Boot Camp volumes benchmarked as expected with Parallels significantly outperforming VMware Fusion except for the CPU score where Parallels Desktop just edged out VMware Fusion.

3DMark06 scores are not as impacted by running off the Boot Camp volume as other tests. As a result, with the exception of CPU score, we continue to see large margins of speed difference where Parallels Desktop 6 is much faster than VMware Fusion 3.1.

Conclusion

Both VMware Fusion and Parallels Desktop for Mac are excellent products, and both allow you to run Windows XP and Windows 7 quite well (except for graphics in VMware Fusion). In

the end, your decision as to which product you should take into account what's most important to you.

Windows 7 is such a pleasurable experience that unless there's some driving reason otherwise, you should be using it under either virtualization product.

When it comes to whether you should use multiple processors or 64-bit virtual machines that depends on your use. If you have a real need for either, and can articulate a reason for it, than use them. They do work well. That said, if you don't have a specific need, then don't bother with multiple virtual CPUs. As for 64-bit, you should use it especially in Windows 7 unless you have a driving reason not to.

Many people have the feeling of "more is better," but when it comes to RAM in the virtual machine, that is not necessarily the case. More RAM means longer virtual machine launch times, suspends and resumes. For most users, 512MB to 1GB of virtual machine RAM will work best. Use more than that only if you really *know* you need it. Gaming may do best with 1.2-1.4GB of RAM if you can spare it. Windows 7 with 768MB to 1GB.

In the vast majority of overall our tests, Parallels Desktop 6 won. Again, if you count up the general tests (including one 3D graphics score), Parallels won 61% of the tests by at least 10%, and was also a bit faster on an additional 23% more of the tests. In other words, Parallels Desktop 6 beat VMware Fusion 3.1 in 84% of the general tests we ran.

If you focus exclusively on 3D graphics, as measured by 3DMark06 version 1.2, Parallels won by an even larger margin. Specifically, Parallels won 73% of the tests by at least 10%, and was also a bit faster on an additional 19% more of the tests. In other words, Parallels Desktop 6 beat VMware Fusion 3.1 in 92% of the 3D graphics tests we ran.

If gaming, graphics, and 3D are your thing, you have a clear choice. Parallels Desktop 6 has so much better graphics support, and is so much faster in most of the comparisons, there's simply no contest.

To be clear, this article is not a product review; it's a benchmarking analysis. You should use it as part of your decision combined with other factors such as product features, user interface, which OS you want to run, graphics capabilities and support to make your product choice.

One thing is clear: virtualization for the Mac works well. Really well—even for casual gamers. Even with that, given the track record, I continue to expect that we'll see virtualization products keep getting better and better.



About The Author

Neil is the Editor-in-Chief and Publisher of MacTech Magazine. Neil has been in the Mac industry since 1985, has developed software, written documentation, and been heading up the magazine since 1992. When Neil does a benchmark article, he likes to test the features that people will use in a real-life scenario and then write about that experience from the user point of view. Drop him a line at publisher@mactech.com

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CONSULTANT COWBOY

by Ryan Wilcox

Roles to Play in Your Business

It's not just about 0's
and 1's anymore.

Introduction

Owning a consultancy business does not mean you get to be an engineer and work on what you want all day. Being a consultant cowboy is more than that, and in this manner is no different from the small bakery down the street: there's a lot more than just baking going on.

There's an assumption that many people have here: once you understand the technical side, that's all you need to know to be a consultant cowboy, or even a baker. There are a lot of other areas that need attention too, and sometimes I struggle with finding time to do all those other things that are that required of me.

This month we'll get what roles you now have to undertake in your business, what (metaphorical) hats you have to wear to get and keep your business going. Playing all these roles are important, even when you're at your busiest.

Some roles you'll do better than others: the trick is to find what you do well, and play to your strengths, and that's what the second part of this article focuses on.

Hats To Wear, Hats To Leverage

In any small business there's a multitude of things to do, and this goes double when you add technology into the mix. You must be businessman, manager, developer, business analyst, finance controller, and marketer.

Businessman

Working in an office has its advantages—someone else goes and buys paperclips when you've used the last one, takes care of the bills, does the filing, stocks up on soda, and the myriad of other tasks an office needs to have done.

This person is now going to be you. Out of pens? You're going to the store....maybe not right now, but you—not someone else—have to make that trip.

This is why you can't assume you're going to bill 40 hours a week, at least initially. Until you really know how to manage your time (or delegate), consider that at least 1 day a week will be taken up by running around and errands stuff.

This office manager stuff is also a good place to find optimizations, time management-wise. Do you really need to run to the store to get folders, or can you put it on a list to do in batch?

You're also the front man for the business. This means that you do the networking, the schmoozing, the business involvement, and the following up on leads. You are the coordinator and the one who sometimes has to fire clients because they're unprofitable or bad business-wise. You're the one who brings business in, and the one who develops the business.

You're also the vision person: the one who thinks about the direction the business is going, where you want to be financially, how you want the business to grow, and how you want to differentiate yourself from the competition.

You're the one driving the company: the imaginative force behind it. The one that explores new opportunities: "What if I grew some talent in this area?," "Can I make some strategic partnerships with local businesses?," "What happened if I started marketing my business towards this technology over there?"

The businessman, or the entrepreneur role, is the dreamer.

Manager

Once the businessman goes and finds all the work, there's need for planning and organizing this work. That's where another role comes in: manager. Being a manager means taking a look at how many projects you have going on, and planning when you can get at this next project, work load wise. Being a manager means thinking about chaos and turning it into order.

Thinking like a manager also can mean taking on bigger jobs than you would normally, by pulling in a team of consultant cowboys to get a bigger job done.

The manager is the general: thinking strategic thoughts and directing troops, noticing work load levels, incoming jobs, and avoiding battles he doesn't have the resources to handle now... or planning unique ways to conquer those too.

Your management roles don't end there, because you're also the project manager for each project you take on: making decisions on a tactical level for each project. You're responsible for figuring out how long a project will take, making sure it's delivered on schedule, interacting with the client, and juggling the priorities of various clients vs. the work you currently have in process.

Consultant

You're also the guy who actually gets the work done. You, as the consultant, might write apps for the client (or do other work, but we'll get to that later in the article!) and your billable hours are responsible for bringing money into the business. To be the consultant you should have been around the block a few times, having been on real projects and interacted with real customers. Academic projects are great, but there's something that hones your


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if (you_have_a_website == true) {  
  
    measure_roi = easy;  
    contact_visitors = yes;  
    real_time = of_course;  
    try_visistat = free;  
    setup = no_brainer;  
  
}  
else {  
  
    no_clue = true;  
    i_use_google = sorry;  
  
}  
  
//REAL-TIME WEBSITE TRACKING  
goto = www.visistat.com;
```



skills when an actual customer is looking over your shoulder wondering when their project is going to be ready for launch.

The book *Entrepreneurs in High Technology: Lessons from MIT and Beyond*, had an interesting survey about previous work experience when starting a technology based business. The survey took 111 carefully studied entrepreneurs (technologists formerly involved with MIT or its labs), and looking at the work experience they had before founding a new business. Out of the 111 studied, 79% had from 3 to 16 years of work experience before hand, 22% had more than 16 years, and only 2% had less than 3 years work experience before going off on their own.

My recommendation here echoes the statistics above: I worked part time for a local software development shop while in college in Rochester NY. It was an amazing learning experience working with people who had been programming the Mac since the 1980s, and I gained a ton of technical experience there, and became a better programmer because of it. This experience probably was the difference, in the early years, in failing vs. keeping the business afloat.

Business Analyst

As the business analyst, you're responsible for working through the requirements of a project with a client, being the middleman between the technology and the client's needs.

You're also going to be responsible for unraveling and understanding business processes that the client themselves might not understand (or the client might be too knee-deep in the chaos — which they consider to be normal — to make any logical or coherent story out of requirements. This making order out of chaos is good, because some of this will happen as a natural part of

translating stories and vague feature requests into functional software to help your client.

You, as the consultant cowboy, are responsible for figuring out what the client really wants. You're also the one who has to translate the requirements into testable user stories for acceptance testing (if you're into that sort of thing).

I've even experimented with using user stories as part of my estimation technique. If not user stories then use discretely testable chunks of functionality. I'll get into this and other tips in a later article.

Likewise, a business analyst needs to be able to talk to the client in a language they can understand. This also means realizing that the client doesn't speak asynchronous wire transfer protocol.

Your clients don't care about this tech stuff, or knowing that implementing an API (be it AppleScript or web REST interface) is a good idea: your client cares about one thing: "How does it help me and my clients?" The client doesn't care that you're implementing the system using the latest tools, they only care about the value they can get out of the system.

These thoughts go double for writing proposals or estimates too. An excellent tongue-in-cheek blog entry by someone I met at a Harrisburg PA BarCamp (the adhoc unconference) illustrates this point well: <http://macte.ch/ccbp>. If you do find yourself speaking wire transfer protocol to a client, don't fret: client communication just may not be one of your strengths. Later in this article, and the next, we'll talk more about how you can play to strengths and minimize weaknesses.



The Money Person

You're also the one who keeps an eye on the budget: what money you currently have, how you're spending it, what money you have coming in, and how you budget and proportion that out.

Likewise, there are financial decisions to be made, and you're going to be the one who makes them (potentially with input from your business partner, spouse, or significant other).

Your finances can be the ultimate barometer of the business: if you're making money, the bank account will show that. If you need to do something different, the bank account will show that, too.

I've tried to give sound financial advice so far in this article, in particular advice about eschewing business loans. I've been reading *The Business Of Software: What Every Manager, Programmer and Entrepreneur Must Know To Thrive And Survive in Good Times and Bad* (by Michael A Cusumano). One chapter of the book has case studies of software companies that have succeeded and failed. Each case study talks about money coming in, and loans (if any) the business took out to keep afloat. See, there's a bad thing about loans (or venture capital money): they enable you to do the wrong thing for longer than you should. Maybe that "wrong thing" is a focus on research and development (not shipping product!), or maybe that wrong thing is the status quo of your business (and you need to move your business to where the money is now).

You don't want to acquire too much loan overhead: if you owe \$500/month in loans, but your business is currently in a "bust" (few projects and little money coming in) phase, that \$500 might important for other things (like paying rent).

Marketer

Starting any small business involves a bit of marketing: customers can't beat a path to your door if they don't know you exist. If you're the local bakery you need to do a certain bit of advertising and marketing telling people about your awesome bread.

As a consultant cowboy, potential clients need to know you exist, that you might be the solution to all their problems.

But marketing isn't just about advertising, putting up big billboards that say, "Ryan is awesome, hire him for your development needs!" It's also about analysis: figuring out what you're good at, figuring out what the local competition looks like, what your strengths are and how to leverage them).

Marketing isn't about sleazy advertising like that billboard: it's about figuring out what service to sell, where, how you do it, then telling people about yourself...even when you're at your busiest already.

In actuality, we've been talking about marketing all along. The first, September 2010, Consultant Cowboy article talked about identifying your competition; in the October 2010 issue we talked about identifying the type of person you are, in the December 2010 issue we talked about a business plan: even a minimalist business plan can set down your thoughts and direct your marketing efforts).

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The second half of this article is going to talk about finding the role - hat - that looks good on you. Future articles will talk more about marketing and what that means for a Consultant Cowboy.

Keeping all these demands in line

A few agile development teams I've been on have scheduled retrospective meetings at the end of iterations. During this meeting all the team members go around and say what went well, what didn't go so well, and what we could do better.

This is an excellent practice that you, as an entrepreneur, could apply. A two-week iteration from my own business a few years ago might have gone something like:

What went well: Got 30 billable hours in for Client Q, and some changes around the office have worked really well.

What didn't go so well: It feels like I spend the whole morning every Monday entering hours into my hours database, and by the time I deal with that and invoicing it's 3 PM.

What I can do better: Spend less time in NetNewsWire reading RSS feeds and doing email.

If I had been having a retrospective every two weeks in the early years of the business, I might have identified problem areas in the business, and come up with solutions earlier than I did.

Likewise, a retrospective helps you reposition your company, or your marketing, towards growing industries. For example, 3 years ago most of my revenue came from Mac OS X desktop development, but now Ruby on Rails pays the bills. Two years ago I changed my marketing emphasis subtly: listing web development top of my list of offerings on my website. A regular retrospective might have identified this trend earlier and let me capitalize on it sooner.

Another bit of fodder for your retrospectives? How much time, and what activities, you're performing your different roles. I encourage you to almost role-play the different roles involved: office manager, front man, manager, developer, etc., and try to come up with solutions for the problems faced by each perspective, then take action towards those solutions.

For example, the "I spend the whole morning every Monday entering hours" in the retrospective is an activity that detracts from my profitable work (writing code for clients). About three years ago I realized that spending so much time entering hours was unprofitable, and found a better way that kept both the developer role ("I hate doing this") and the front man ("I need to get hours so I can make an invoice") happy.

Finding the hat that looks good on you

As a Consultant Cowboy you'll need to, at some point, do all of the things listed above, but this doesn't mean that you should (or can!) be an expert in, or strong in everything.

Breathe, and realize that this is OK.

Yes, this goes against wisdom.

Traditional corporate annual reviews often feature a "here are areas where you are weak and need to improve", with the idea that if you exercise your weaknesses you can be stronger in those areas.

You might approach your business like this: "Wow, I'm weak in JavaScript, so I'm going to take on some JavaScript projects so I can get better," or "I'm bad at bookkeeping, I would need to spend more time to understand it."

Yes, there's value in improving yourself, learning new technologies to keep current, and reducing your weaknesses. My advice to you, to keep it simple, is to forget those performance

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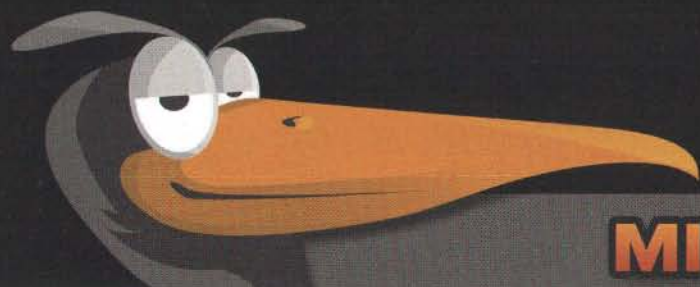
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reviews and leverage what you're already good at as business strength.

If you're already good at programming network client/server apps, let the world know! Being a consultant cowboy is hard enough without handicapping yourself further by ignoring your strongest workhorse! You need every advantage you can get, and will have plenty of other things competing for your time and energy.

You might think, "How can I leverage just my strengths? It sounds like I have to be good at almost everything to get client work!" There's a life hack here: you don't have to be. Here are some examples...

Wearing your Super nerd hat with pride

If you realize you are (or have been told), that you're bad with people that don't have a Masters degree in Computer Science, maybe you need to rethink your strategy. Or maybe some of the talk from the business analyst section rang a little too true for you. Because as a Consultant Cowboy, you may have to talk to the neighborhood doughnut shop owner about his idea about doughnut ordering online...without mentioning asynchronous protocols or web services. (Because they don't care).

If you really need to talk about web services (or the innards of the C++ type system) to customers, you need to leverage that ability of yours: perhaps targeting other consultancy companies, with you being staff augmentation, or find an agency that needs technical help on projects. In both cases, the other company has already mined the technical requirements out of the messy, wishy-

washy desires of the client, and can present you with cleaner system requirements.

Back end strong? Then wear that hat with gusto

Some programmers are often stereotyped as being bad at UI design, be it rich apps on the desktop or websites. Maybe you realize, or have been told, that your UIs are ugly, lack flair, or are unusable. Now might be the time to work with a UI person to make your designs better, or find a designer and partner with them to jointly bid on a project.

For example, in the web world, a designer can take your HTML output and style it properly with CSS stylesheets, or work with you to create conventions in the app that work for both of you (and might also result in better, more semantic, final product!).

Good with tech, and people, but not with code? Find a unique hat to wear

Maybe you're not that good at programming, but are good at something else. Maybe you're awesome with requirements, scheduling, training, coaching, marketing, or something...but not so much with code.

All hope is not lost! Maybe you are profoundly technical. You've written code in the past, but maybe you aren't just as good at it as you could be.

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Don't throw your dreams away just because you don't know deep, technical facts about C++. That's not where your strength is. What is?

An example, from the Mac indie developer community, of someone who doesn't code but still renders a valuable freelance service: Ash Ponders, of <http://www.apifolk.com>. He found his strength (understanding products and helping other people use them) and found a market for his skills: he answers customer support email for indie developers. An incredibly important job, an interesting strength/niche, and a real problem in the developer community: As a developer, where would you rather be: in Mail.app all day answering email about your application, or in Xcode.app *writing* your application? I know I'd rather be writing my app, and if I can outsource support, then more power to me.

Find others who need you to wear your hat

Consultant Cowboys in general have a disadvantage: their small size makes it hard to get big contracts. Potential clients might be scared of a lone consultant just walking off, or maybe the project is just too big for one person.

It may be to your advantage to make friends in the developer and consultant community, locally or remotely. For example, the modern iPhone app is composed of not just an iOS app, but also a slick interface and oftentimes a backend website for the iOS app to store data.

Outside of the fact if you can do all these things yourself, it's a lot of work in separate areas. If you have a sister consultant company you can rely on for some of the project, you can take on bigger (more stable!) projects than if it's just you. Maybe your

strength lies in the website part of it, and not the iOS app side, and you need some help there. Partnering up to bid on projects as a team can open interesting (and sometimes longer term!) projects that you can find individually.

Hats from other places: your outside interests/knowledge

Setting aside technical capabilities, is there something about you that is a particular strength? Maybe you love playing with hardware, or have a former career as an accountant? Really enjoy writing documentation? Know sign language?

Ask yourself why, outside of technical reasons, would a customer want to hire me? Especially when someone in India (or China, or down the street) can work twice as hard as I do for half the wage? There might be a niche in there, or an idea of an industry you can target with your marketing.

If you're coming from a major technical corporation, you might have dealt with a decision about becoming a manager vs. staying an engineer. The "This Developer's Life" podcast (<http://thisdeveloperslife.com>) has an excellent episode about this (Episode 1.0.9 - Management), with interviews from several people having to make this career choice at where they work.

One interviewee talks about how he was in a management role, but is looking to go off on his own and getting back into technical work. Several other interviewees talk about how they are managers now, and what that means for their personal happiness. Maybe that career choice is what made you look into being a consultant, but that experience also might be one of your particular strengths.

However, if you were in management and didn't like the project/number crunching, think about that too: there's going to be a little bit of that as a consultant too.

Conclusion

Running a business requires a lot of different types of work beyond just engineering, which is great: you have a lot of things going for you beyond just the technical side of things, too. Maybe this involves a little change of plan from what you first thought. Maybe you have some thoughts on marketing yourself, or thoughts on how you want to go about marketing.

Next month in the Consultant Cowboy series is marketing: figuring out what service to sell, where, how you do it, then telling people about yourself. How you can use this to develop your business into something you want to do, not selling yourself into doing boring work that you hate.

Until then: See you, consultant cowboy.



About The Author

Ryan Wilcox has been consulting on his own for the last 8 years, through ups and downs in his business. In 2009 he started thinking about best practices for business, in addition to his normal thinking about programming. He can be found at: <http://www.wilcoxd.com>. Have thoughts or want to give feedback on this article? rwilcox@wilcoxd.com

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Introducing the EDA Showcase

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Welcome

This month's issue marks the beginning of a new section of *MacTech Magazine* called the *Enterprise Desktop Alliance Showcase*. If you aren't familiar with the EDA, their mantra is "Making it easy to deploy, integrate and manage Macs in a Windows environment." Each month, the Enterprise Desktop Alliance (EDA) will bring you technical information in *MacTech Magazine*.

Whether IT supports them willingly, grudgingly, or not at all, Macs are becoming an inevitable presence, and in most organizations, continuing to grow year-over-year. This is borne out in recent reports from IDC as well as a survey from the EDA with participants reporting an estimated growth of 26% for business and personal use.

What is the Enterprise Desktop Alliance?

In 2008, the Enterprise Desktop Alliance was founded to provide information to IT managers and administrators about how they can leverage existing Windows infrastructure to easily integrate Macs into their organizations.

With the right solutions, Mac-Windows integration can be done without having to depend on a parallel infrastructure. This is welcome news to those who were surprised by Apple's announcement in November 2010 that they intend to discontinue the Xserve at the end of January 2011. Nor is there any need to maintain specialized skill sets and expertise to facilitate Mac management.

EDA member companies provide best in class technology and solutions that enable IT departments to deploy, integrate, and manage Macs throughout their organization using the standard Windows-based management tools that are already in place.

Computer Lifecycle Management: Manage PC, Mac, and iOS4 devices from a single interface using existing Windows infrastructure. Asset information is easily integrated into third party applications such as Microsoft SCCM and Web Help Desk.

Identity & Access Management: Use familiar Windows-based administrative and Group Policy tools to centrally manage accounts, define access controls and enforce security and configuration policies for Macs by integrating them seamlessly into your existing Active Directory domain. Enable two-factor authentication with support for CAC and PIV smart cards.

File & Print Services: Allow for seamless file and print sharing between Mac desktops and Windows servers with a solution that provides complete platform and application compatibility.

IT Service Management: ITSM professionals can access an enterprise level, cross-platform service desk solution that is

intuitive, flexible, and extensible. 100% browser based and web-standards compliant, all application features will be available to users on Mac OS X, Windows or Linux.

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Centrify enables organizations to reduce IT expenses, strengthen security and enhance compliance by securing their cross-platform environments through Active Directory-based identity and access management. With Centrify DirectControl for Mac, IT administrators can use familiar Windows-based administrative and Group Policy tools to centrally manage accounts, define access controls and enforce security and configuration policies for Macs. Over 2500 enterprise customers worldwide have chosen Centrify for its quick-to-deploy, easy-to-manage next-generation technology to manage and secure not only Macs but 250+ versions of UNIX and Linux as well.

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Now, in the pages to follow, enjoy the first EDA Showcase article.

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I go both ways.

I use a Mac.



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Centralized Mac Home Directories on Windows Servers

Using Windows to Serve the Mac

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Welcome

Introduction

Now that Apple has discontinued the Xserve, it may be time to revisit using a rack-mounted Windows server as a file server. The most popular use of the Xserve is as a file server. You can continue to provide your Mac users with a Mac experience at the same time you leverage your established Windows servers and expertise to provide backend file services.

While Mac OS X provides support for using SMB to access Windows shares, the native AFP protocol has many advantages for Mac OS X systems, and Group Logic's ExtremeZ-IP Server enables a Windows server to fully support AFP clients such as Mac OS X. Organizations wanting to integrate Mac OS X systems into their Windows-based enterprise network will most likely want to also centralize the storage of user home directories on a Windows server to ensure proper data security and backup policies are applied.

We'll tell you how to easily connect your Macs to Active Directory and to leverage Windows Server to provide AFP services for those Macs. Your users will log in to a Mac OS X system with their Active Directory user ID and password to gain access to their home directory stored on a Windows server. This paper will also explain how to set up a Mac to support a Distributed File System (DFS) hosted home directory. The integration of DirectControl and ExtremeZ-IP combine to provide IT administrators the tools and services they need to fully integrate Mac OS X systems into both the centralized administration and management that Active Directory provides as well as the centralized network storage that Windows Server provides, further reducing the cost of managing OS X systems in a Windows-centric enterprise.

Mac OS X provides the flexibility to enable administrators to use local hard disk or a central server to store the user's home directory. When they choose to store the home directory on a network file server, there are even more choices, such as SMB (Server Message Block), AFP (Apple Filing Protocol) or NFS. Additionally, Windows servers can create a DFS (Distributed File System) directory that is spread across different

storage volumes. It is also possible to combine these methods and maintain a master home directory on the server while providing offline access with a local cached copy of the network home directory; Apple calls this a Portable Home Directory.

CentrifyDirectControl joins the Mac OS X system to Active Directory and provides the user authentication, manages the user's UNIX (Mac OS X) identity, sets up the Kerberos environment for SSO, and manages the home directory path and mounting of network home directories. In this scenario, we will use the AFP protocol to enable the user to access a Windows server for the home directory since it offers many advantages over using the SMB protocol.

Set Up the Windows Server and ExtremeZ-IP

The Windows Server and Mac workstation must be joined into the same Active Directory forest. This server does not have to be configured with the file server role in order to serve a file system to Mac systems, but if you want to also provide home directory services to Windows computers, then you should configure this system to also be a file server.

Kerberos-based user authentication enables a Windows home directory to be mounted at the time that the user logs in without needing to store a user ID and password anywhere on the system. This ensures that the user's Active Directory password is protected and the resulting Kerberos environment can be used to authenticate the user to the AFP-based home directory provided by ExtremeZ-IP.

In this article we will be using examples from ExtremeZ-IP 7.1, the most recent version as of this writing, which supports DFS described later in this article.

We can optionally set up ExtremeZ-IP Server's Settings to define the name that the server will be known to AFP-based client workstations. Typically this is only necessary to support Mac OS 9, but in some cases it may be helpful for Mac OS X clients.

Choose the Settings/Service Discovery tab. In this case, we will use the same name for the AFP Server Name as the Windows name so that DNS will resolve to the same computer.

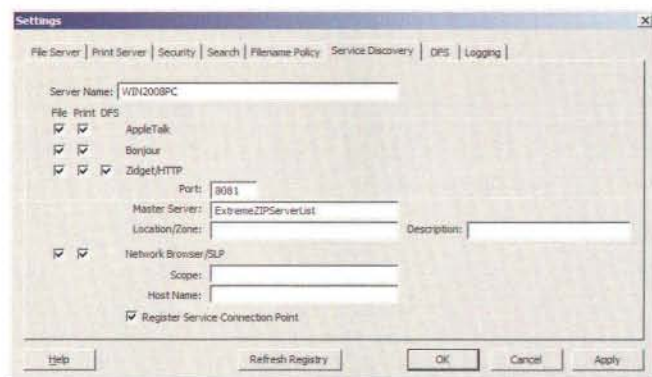


Figure 1. Service Discovery Settings

Choose the Settings/File Server tab and check “Enable Home Directory Support” and the “Use Profile Home Directory Support”, a feature of ExtremeZ-IP that hides all other directories in a sharepoint from the user except for his specified home directory, thus eliminating the user's ability to see all other users' home directories (which he shouldn't be able to access). However, if you want users to be able to access directories other than just the user's home directory, you may want to leave “Enable Home Directory Support” unchecked.

Check “Allow Kerberos Logins” to enable users to gain access to the server without having to type their user ID and password once they have logged in with their Active Directory credentials (Single Sign-On feature.)

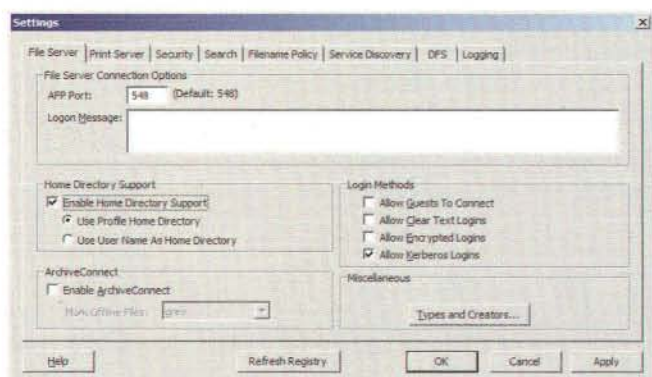


Figure 2. File Server Settings

Next we need to define the Volume that will be shared via AFP. Click the “Volumes” button at the bottom of the ExtremeZ-IP window, and choose the directory containing the user's home directory. In this example we will share “C:\Users” and give it the ExtremeZ-IP Volume Name of “Users”. If we want to hide this ExtremeZ-IP Volume from users that do not have a home directory on it and hide all directories except for

the user's own home directory from the user, check “Use volume as a home directory.”

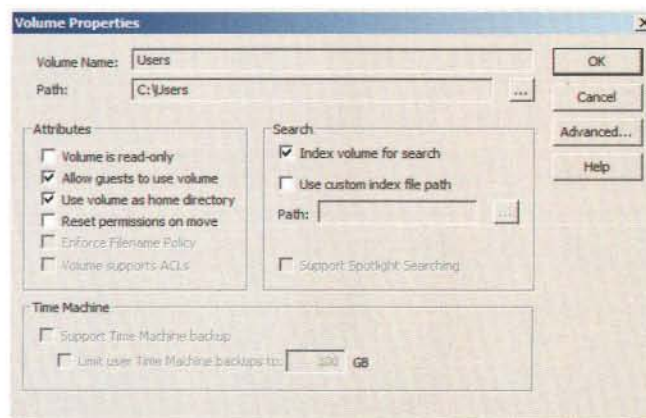


Figure 3. Volume Properties

In the Profile tab of the user's Active Directory Users and Computers user account properties, define a network home directory share path by selecting the “Connect” radio button, an appropriate Drive Letter, and entering a valid path. When the “Apply,” or “OK” button is clicked, a home directory is automatically created for the user according to the path.

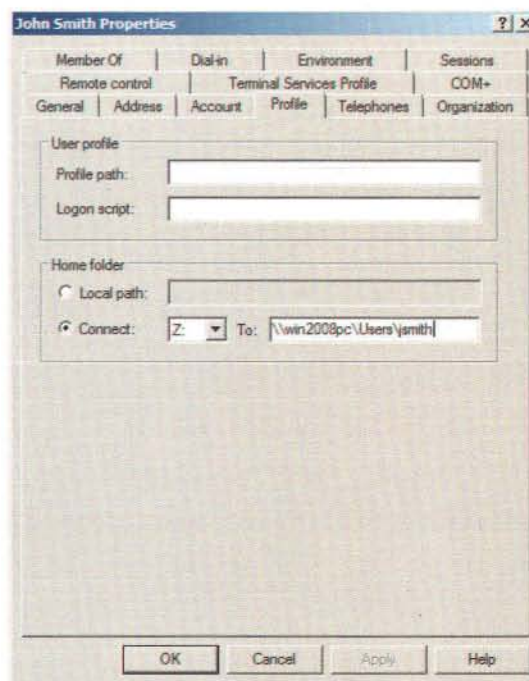


Figure 4. User Account Properties

It's a good idea to log in from a Windows client machine with the Active Directory user and ensure the user can log in and their network home directory is automatically mounted in Windows before proceeding to the Macintosh configuration.

Install and Configure DirectControl on the Mac

DirectControl provides centralized management of all UNIX, Linux and Mac user attributes, including their identity and home directory path. These new user attributes can be managed using the Active Directory Users and Computers MMC console on the Centrify Profile tab, or through the DirectControl Administrator Console. For a user who might need to have more than one independent set of UNIX or Linux or Mac user account properties DirectControl supports them by establishing using a "Zone," which is a logical grouping of computer systems.

For the purposes of this article, we will install DirectControl on the Mac workstation and join the Mac to Active Directory in "Workstation Mode," which only requires DirectControl to be installed on the Macintosh computer and Centrify Zones do not need to be defined or configured.

Steps to Install Centrify DirectControl and Join the AD Domain:

Before starting, ensure that your Mac operating system is supported. DirectControl currently supports Mac OS X 10.4 and later on both PPC and Intel processors.

1. Download the DirectControl for Mac DMG file. This is a Mac "disk image" that, once downloaded, will automatically mount a volume containing the Centrify DirectControl for Mac installer and relevant Mac utilities and documentation to your Mac desktop.
2. In the DMG, double-click to launch the ADCheck utility.



Figure 5. ADCheck Utility

The ADCheck utility can alert you to any network issues that would prevent your Mac from reaching a Windows domain controller. Resolve any issues before going to the next step (you may need assistance from your Windows administrator).

3. Double-click the installer package, CentrifyDC to install DirectControl on your Mac.
4. When the installation finishes, the Centrify ADJoin utility will



Figure 6. User Accounts in System Preferences

launch so you can join your Mac to an Active Directory domain. In ADJoin, type the name of your Active Directory domain, and select the Workstation Mode radio button. Then click the Join Domain button.

Configuring centrifydc.conf for Network Home Directories:

In Workstation mode you will need to use a text editor to configure 2 items in the file `/etc/centrifydc.conf/`

`auto.schema.remote.file.service` should be set to "AFP"

example:

`auto.schema.remote.file.service: AFP`

and

`auto.schema.use.adhomedir` should be set to "true"

example:

`auto.schema.use.adhomedir: true`

After these settings, you will need to either reboot the Macintosh computer or run these 2 Centrify command line commands in the Macintosh terminal app as an admin user:

`adflush`

`adreload`

Testing the Solution

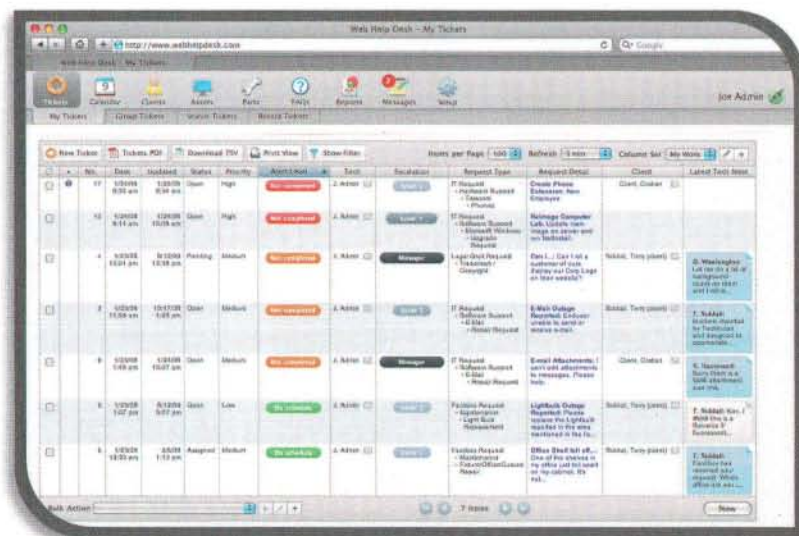
Once a computer is joined to Active Directory, any user who has a valid Active Directory user account on a computer that is joined to the AD domain will be able to log in using the Mac workstation without any further user configuration required on the system. DirectControl enables the Mac to be treated just as any other Windows workstation in the environment based on the user authentication policies and



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login methods that are supported and modeled after an XP workstation in an Active Directory environment.

Logging in to this Mac for the first time with the user's Active Directory user ID and password results in the network home directory being populated with the default set of Mac user files and folders on the Windows Server. We can see in the Accounts panel within the System Preferences that the user's account, "John Smith," is a Network account that was defined in Active Directory.

Opening Finder and going to the Home directory will show that the Home Directory path is mounted to the AFP network share that we previously defined.

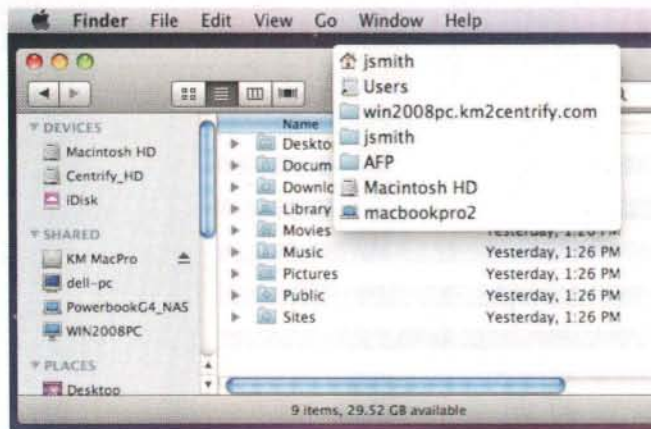


Figure 7. Home Directory Path

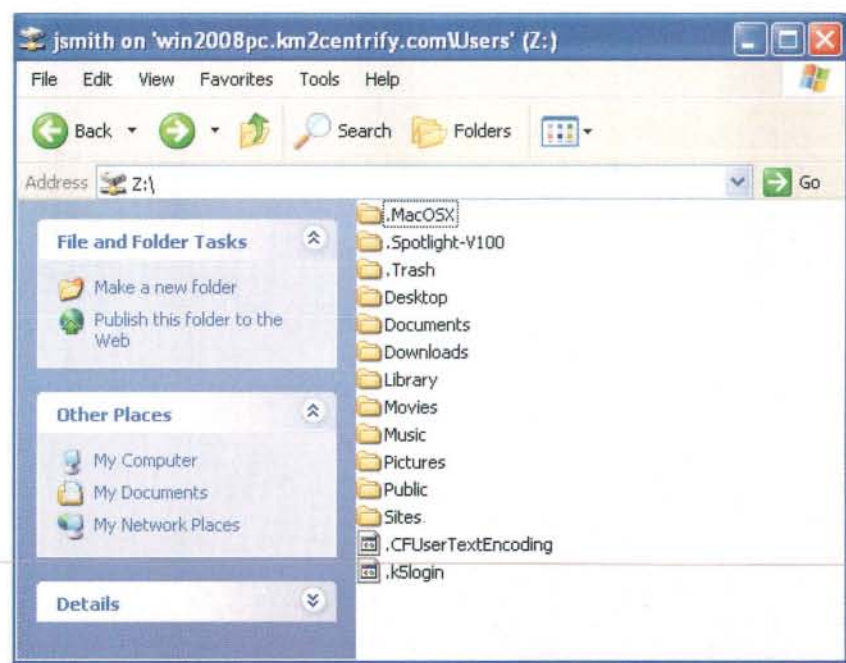


Figure 8. Same Home Directory from Windows

We can also see on the Windows server that the home directory was properly populated with the default home directory contents for a Mac workstation on the server.

Kerberos-based authentication from the Mac to the Windows server also ensures that proper permissions are enforced as the user accesses files and folders on the server in addition to providing the user with single sign-on to the file server. By using Kerberos to authenticate to the server, the file server will enforce proper security regardless of the user's local UNIX identity on the Mac workstation, meaning that a user may have a UID of 10000 on a laptop and a different UID of 15000 on a Mac in a lab environment, and yet the user will still be able to access his network home directory from both workstations based upon his Kerberos-based authentication to the server. File permissions will be reported back to the user that he can read and write the files, while on the server it will show that his Active Directory account is the owner of the files.

Now that the user has a home directory he can access from a networked workstation, he will be able to use either a Mac or Windows computer to get to his home directory using the platform's native network file access protocol for the best platform compatibility.

Using Centrifly DirectControl with DFS

Microsoft Distributed File System (DFS) is a set of technologies used to present a single virtual namespace to a collection of file servers and manage replication of data between those servers. Microsoft DFS consists of two technologies:

- DFS Replication (DFS-R): providing facilities for replicating file server data between locations and servers.
- DFS Namespaces (DFS-N): allowing administrators to group file server shares on disparate machines into a single virtual namespace so end users can access files without needing to know where the files are located.

Using DFS provides numerous benefits, including allowing administrators to relocate share points to other locations or servers without having to change the network paths clients use to access the share.

To use DFS with a Macintosh client, the Macintosh and ExtremeZ-IP need to be configured to use DFS. For the purpose of this article, we will use the ExtremeZ-IP DFS Client application on the client Macintosh, and assume the Client Macintosh is running Mac OS 10.5+, which currently are the only versions to support DFS home directories on a Macintosh.

In the following example, for clarity, we have used a different Windows directory and ExtremeZ-IP Volume than described in the previous section, but there is nothing preventing non-DFS and DFS Macintosh clients from using the same home directory.

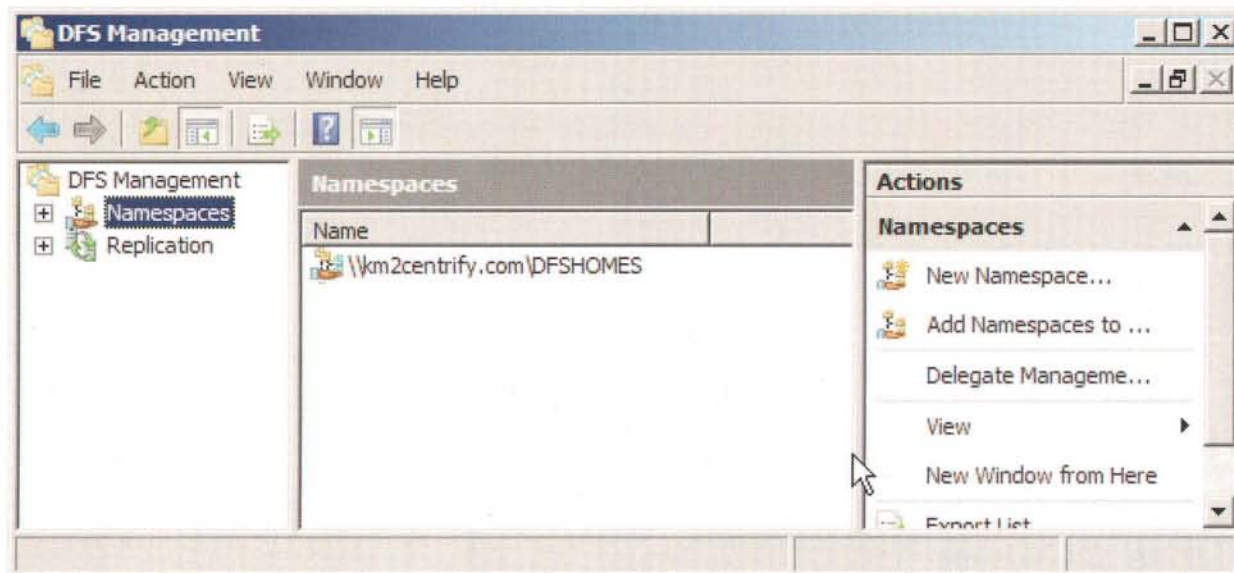


Figure 9. DFS Namespace

Configure ExtremeZ-IP on the Windows Server to support DFS:

A Summary of the Steps to Use DFS home directories with ExtremeZ-IP:

- Configure your Windows server and Active Directory Users to support DFS and DFS home directories
- Configure ExtremeZ-IP to use the DFS Namespace
- Set up an ExtremeZ-IP Volume on the target server for the folder containing the User Home Directories
- Set up an ExtremeZ-IP Volume on the DFS Root Emulator for the DFS Home Directory
- Download and Install the Group Logic DFS Client Application from the ExtremeZ-IP Web Server onto your Mac
- Edit the Group Logic DFS configuration file `/etc/dfs/servers.conf` file on the Mac client, adding the IP address or hostnames of your ExtremeZ-IP DFS root server(s)

If you do not already have an appropriate namespace, you should configure a DFS Namespace on a Windows Server, using the Windows DFS Management Application. In our case we created a namespace called DFSHOMES on a single server that is our Domain Controller, DFS Root Server, and

DFS Target Server.

Add a target to your DFS Namespace for the directory containing your User home directories. In this case the user home directories reside on the Windows Domain Controller local file system, but they would usually point to a network share.

We've called our DFS Folder "DFSHomeDirs" and it is targeting an actual directory, "C:\DFSUsers," which contains the Home Directories of our users. Please note that the target directory (in this case "DFSUsers") needs to be shared and accessible with the correct permissions on the network. In other words in our simplistic single server example the DFS link

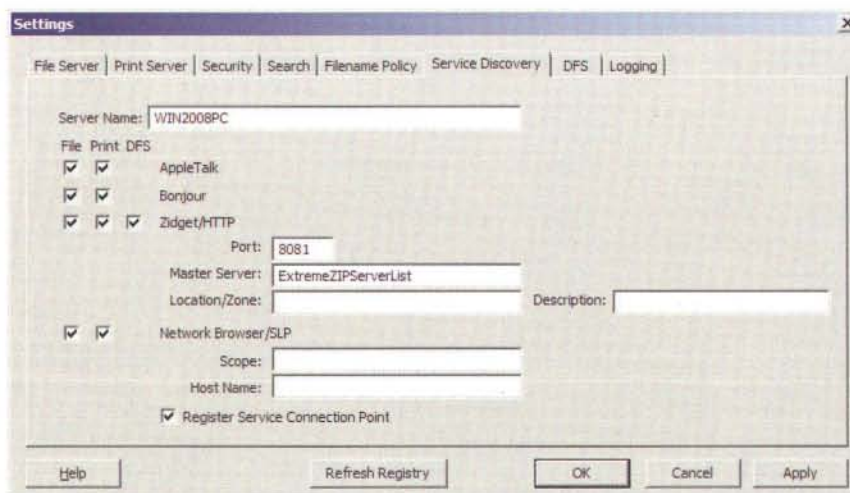


Figure 10. DFS Servers

`\\km2centrify.com\DFSHomes\DFSHomesDirs` resolves to a target share of `\\Win2008PC\DFSUsers` which happens to be the same server.

Make sure your Active Directory user profile points to the new DFS Namespace, rather than an actual path. In this example, the user "Mary Jones" Home Folder path is: `\\win2008pc.km2centrify.com\DFSHOMES\DFSHomeDirs\mjones`.

At this point you may want to validate the Windows DFS configuration by logging in this user with a Windows Client. If

they can log in and their network home folder is mounted, even though their Home Folder profile uses a DFS Namespace, then proceed with this setup for Mac users.

ExtremeZ-IP DFS Configuration

In the ExtremeZ-IP application in Windows, click the "Settings" Button and Select the "DFS" tab. Click the "Add" button and enter the path to the DFS namespace you defined in the Microsoft DFS Management Application. In this case it's \\KM2CENTRIFY\DFSHOMES

ExtremeZ-IP will validate the path and will put up the Namespace and the corresponding target server. You'll need to check the AFP radio button and click "OK".

ExtremeZ-IP AFP Volume Creation

You'll need to create ExtremeZ-IP AFP volumes for each of the following paths:

- On the DFS target server the Directory containing the actual Users' Home Directories which was targeted above using the Windows DFS Management Application
- On the DFS root emulator the ExtremeZ-IP DFS Root Path Home Directory within the "Volumes" window of ExtremeZ-IP, create an AFP volume from the Directory containing the actual Users' Home Directories. In this example it is "DFSUsers."

ExtremeZ-IP's DFS configuration creates special directories on your file server in "C:\Program Files\Group Logic\ExtremeZ-IP DFS Volumes\" The Automatically created ExtremeZ-IP Volumes contained in this folder allow a Macintosh with the appropriately installed Group Logic software to use symbolic links contained in these AFP shares to properly resolve the DFS Namespace. In this example C:\Program Files\Group Logic\ExtremeZ-IP DFS Volumes\KM2CENTRIFY is the automatically created volume. The automatically created volumes in this directory will work for normal DFS browsing but in the case of home directories we will need to manually share out a subdirectory.

Create ExtremeZ-IP subvolumes for the home directory folders located inside of "C:\Program Files\Group Logic\ExtremeZ-IP DFS Volumes." In this example the path is "C:\Program Files\Group Logic\ExtremeZ-IP DFS Volumes\KM2CENTRIFY\DFSHomes."

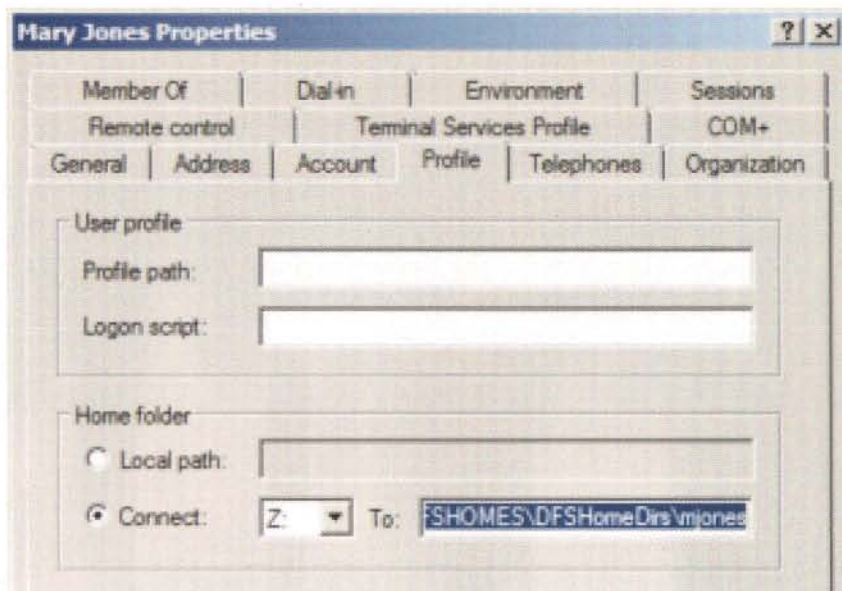


Figure 11. Profile points to DFS Namespace rather than an actual path

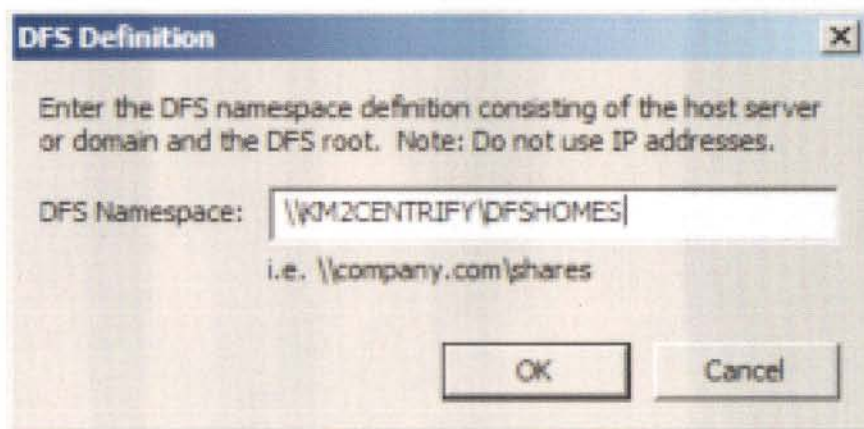


Figure 12. DFS Definition

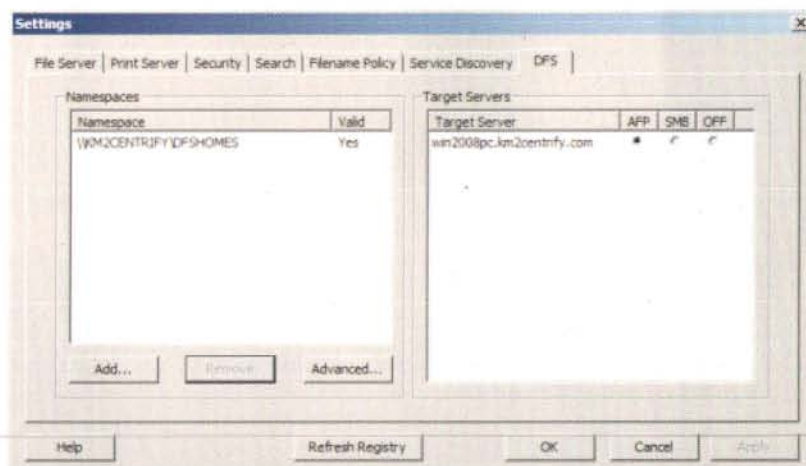


Figure 13. Validating the Path to the DFS Namespace

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The IT Director

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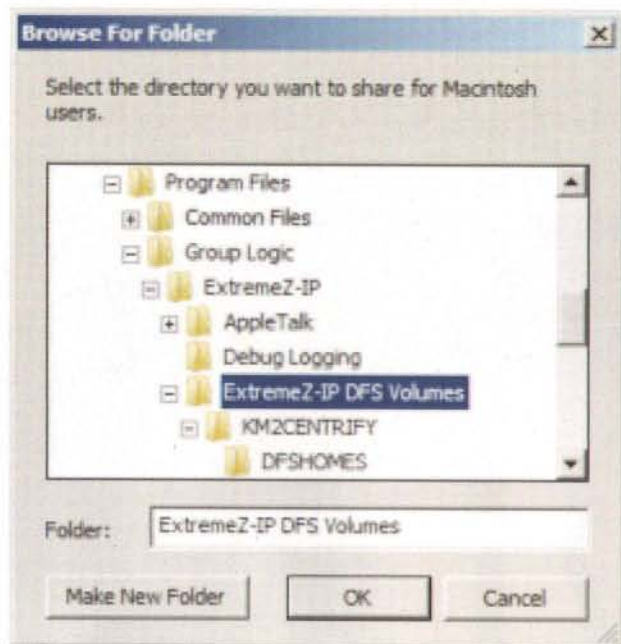


Figure 14. Sharing DFS Volumes

These volumes will be added to the ExtremeZ-IP Volume list

Group Logic DFS Macintosh Software Installation

On the Macintosh, which has been successfully joined to your domain using Centrify DirectControl, go to a web browser and point to the ExtremeZ-IP web server running on your domain controller using the domain name or IP address:

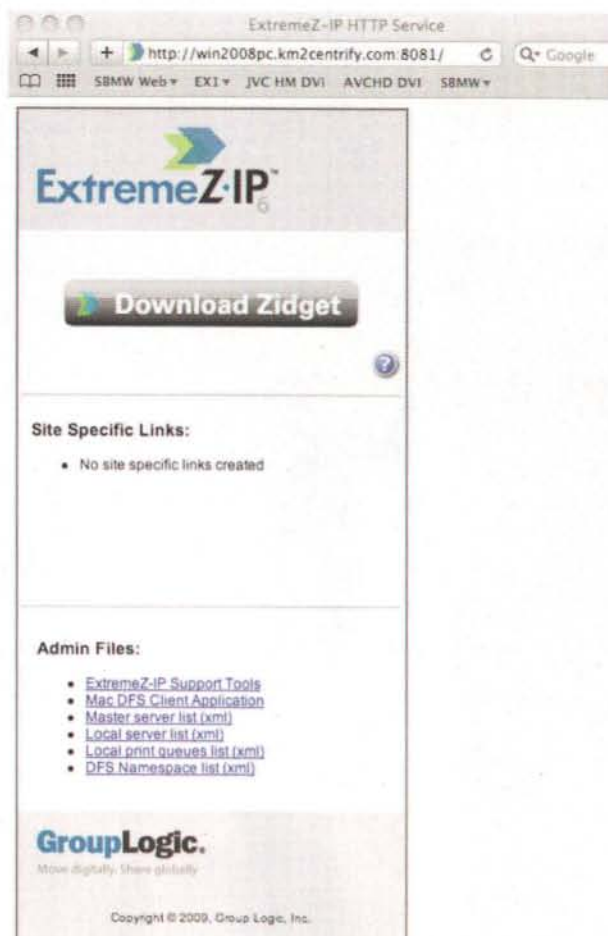


Figure 16. DFS client software

Click the "Mac DFS Client Application" link to download the

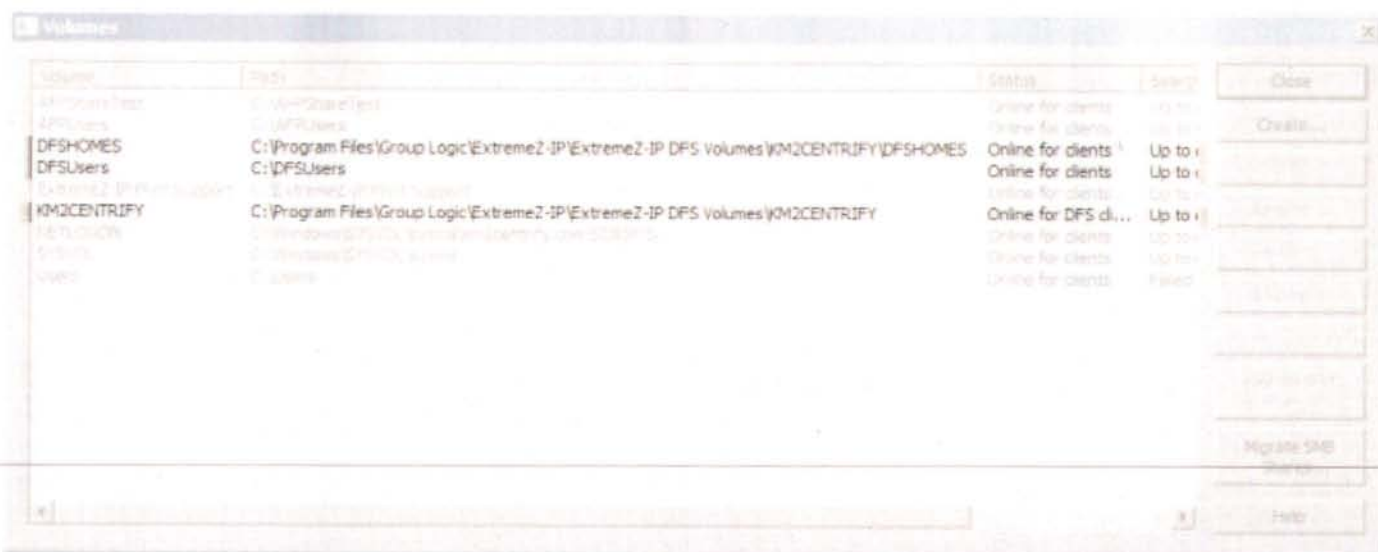


Figure 15. DFS Volumes

installer. You'll need to enter your Mac's administrator user name and password for the install.

Once the Mac DFS Client Application is installed, you'll need to edit the file `/etc/dfs.servers.conf`, which was created when the Group Logic Mac DFS Client Application was installed.

Add the fully qualified domain name and the port as the last line of this file. In this example, we added the line `"win2008pc.km2centrify.com:8081"` to this file.

```
/etc/dfs.servers.conf:#####
# This file is used by Group Logic, Inc.'s
# DFS client application. It should contain the
# fully qualified domain name and port for the
# ExtremeZ-IP DFS root servers to be contacted
# to allow the Mac to browse your DFS namespace(s)
#
# example: bookers.gililabs.com:8081
#
# the default port for use with ExtremeZ-IP is 8081
#
#####

#add server(s) below, one per line
win2008pc.km2centrify.com:8081
```

In `/etc/CentrifyDC/centrifydc.conf`, ensure that you have the settings `"auto.schema.remote.file.service"` set appropriately to AFP. For example:

`auto.schema.remote.file.service: AFP`

Note: You can also take advantage of the DirectControl Group Policy in order to centrally manage this `dfs.servers.conf` file by using the "File copy" Group Policy to distribute a common file to all systems to which the policy applies.

Testing the Configuration

After installing and configuring the Group Logic DFS Client Application, reboot the Macintosh. At the login screen, log in as the user you've configured. The DFS network home directory user has logged in on the Mac, and if this is the first login from the Mac, the remote home directory will be populated with the default set of Mac user files and folders.



Figure 17. User's directory is automatically populated with the default set of Mac user files and folders.

Summary

Enterprise organizations that want to integrate and embrace Mac users into their environment can fully integrate these users with the combination of Centrify DirectControl and Group Logic ExtremeZ-IP. DirectControl ensures that the workstations enforce the company's security policies through Active Directory authentication and password policies, and Group Policy will also enforce the enterprise security configuration policy standards. ExtremeZ-IP ensures that Mac users can securely access their network home directories via AFP and store Mac files properly on a Windows server with the advantages of DFS.

For More Information

For more information on DirectControl for Mac OS X, check out our web site at:

<http://www.centrify.com/solutions/mac-os-desktop-management.asp>

For more information on ExtremeZ-IP, visit the Group Logic web site at:

<http://www.grouplogic.com/products/extremeZ-IP/>

KB article on "How does ExtremeZ-IP map the Windows security model to Macintosh-style folder permissions?"

<http://support.grouplogic.com/?p=1556>



About The Authors

The members of the Enterprise Desktop Alliance are committed to making it easy to deploy, integrate and manage Macs in a Windows environment. The authors are technical experts within Centrify and Group Logic.
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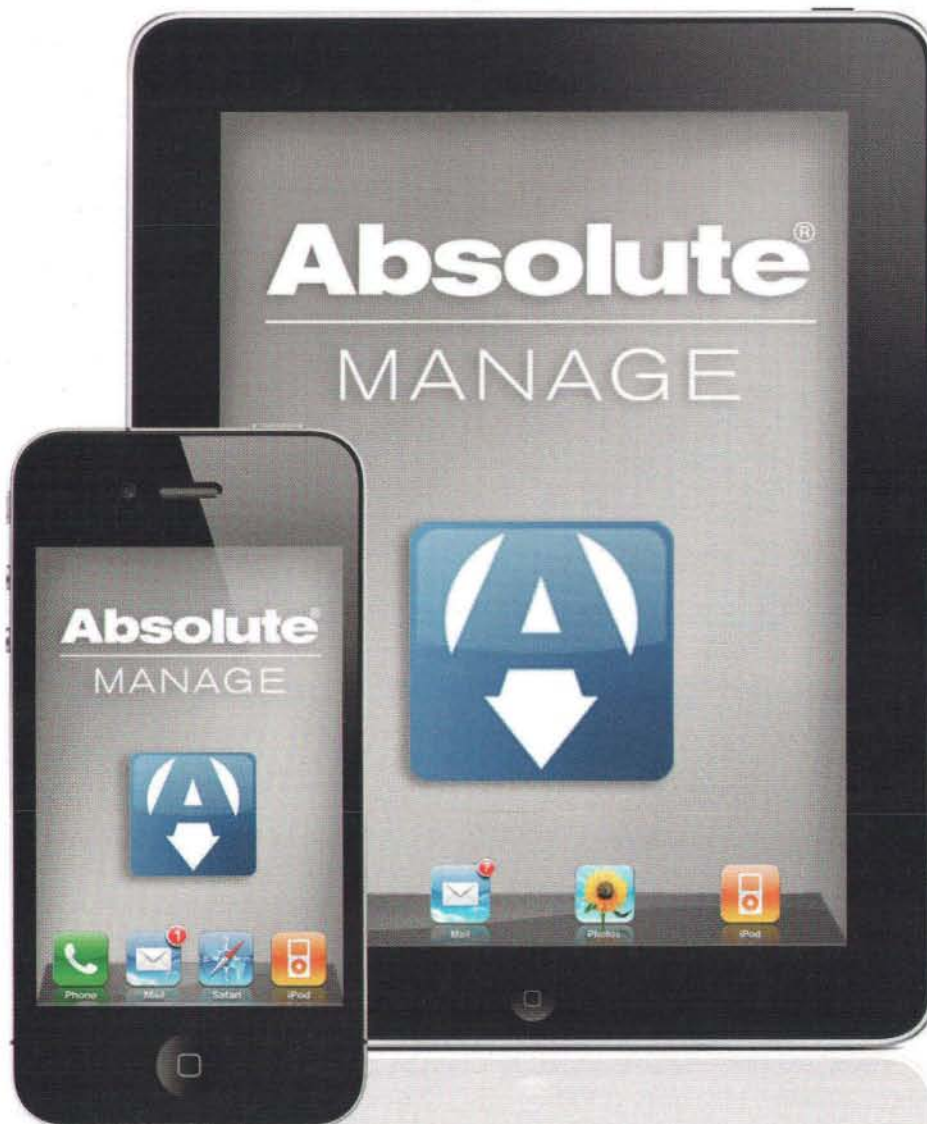
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Shhhh.. Big Brother May be Listening

What you need to know about VOIP, Face Time, Skype and iChat security

By Michele (Mike) Hjörleifsson

Introduction

I was having a conversation with a successful entrepreneur that I know who is still using physical T1 lines for his voice traffic; the topic was about voice over Internet protocol (VOIP for short) and why he hadn't made the switch to this technology in his business. He tends to adopt new technology, especially when it can have a positive impact on the company's bottom line, so his refusal to make this switch perplexed me. After a long discussion his hesitancy boiled down to concerns that hackers could intercept, record and playback the packets of VOIP he was transmitting, in essence tap his phone lines. This intrigued me so I conducted an unofficial focus group of some of my other customers who hadn't adopted VOIP yet and several of them had the same concerns. In short this is the basis for my segment this month: is VOIP a secure enough technology to replace traditional POTS service for conducting business and discussing sensitive information?

VOIP Primer

A good place to start this conversation is a quick overview of how VOIP works. While there are a myriad of standards and proprietary protocols in use to achieve VOIP, the two most widely used are either based on SIP (session initiation protocol) or a proprietary protocol used by a that specific provider. Services like Skype use a proprietary protocol, while services like FaceTime, Comcast, Verizon, Cablevision, Lingo, Vonage and many others use SIP. Both use UDP (User Datagram Protocol) as the primary means of delivering the media channels, the audio, we actually hear when we are on a telephone call. Developers of VOIP applications and protocols prefer to use UDP due to its speed, lower overhead, and connectionless design. But with speed and performance come some limitations, there is no transmission verification (known as acknowledgement or ACK) that the packet actually arrives or retransmission of any packets that were lost during the delivery from the originator to the destination and no built in security methodology to ensure that there is either a) no one listening to the packets or b) jumping in the middle of the conversation and pretending to be someone else. So what does connectionless design mean?

An easy way to explain it is the difference between your mom coming into the living room and stating that dinner is ready, and ordering at a restaurant. Your mom is letting everyone within earshot know that dinner is ready, and is not necessarily concerned with successful delivery of that message to each individual. In contrast, a waiter is very concerned. The waiter verifies your order, ensures that it is properly delivered to the kitchen and, if wrong, redelivers your order to the kitchen. You can see an inherent security issue in the way mom delivers the message; anyone can hear the it, even those who are not supposed to.

How would you listen in and potentially record these messages? There are several tools available, the primary tool being tcpdump (yes tcpdump can capture and record UDP) and RTP tools (open source project from the University of Columbia) that can capture traffic into a file for later playback. So let's take a look at some of the different providers and how they ensure your conversation is truly private.

Apple's Technologies

Apple has traditionally employed XMPP (Extensible Messaging and Presence Protocol) in its iChat functionality. They have departed from this in the new FaceTime technologies on iOS and Mac OS X. iChat has provided encryption of your conversations since version 2, and encryption of voice and video since version 3. FaceTime leverages the iChat encryption methodology, which you can monitor for yourself. If you capture the actual UDP traffic and read the SIP information provided, you can see that iChat encryption is enabled and the RTP playback tools cannot decrypt the messages. One additional feature that I like about FaceTime is that the connection server-used does not place the originator or destination noun names in any of the traffic, in other words even though you can see a FaceTime session starting, you don't know who it is between and can't decrypt the conversation (because of the encryption) Rating: Safe for voice and video.



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Skype

Skype utilizes a proprietary, peer-to-peer technology based on the Kazaa file sharing protocol. Skype encrypts all text, audio and video traffic utilizing an unpublished encryption and transmission scheme. I have captured and attempted to decipher Skype traffic to no avail. While capturing is fairly simple, deciphering proved quite impossible, at least for the standard hacker and off the shelf and open source tools. Rating: Safe for voice and video.

Other VOIP Providers

There are a plethora of other VOIP providers out there these days, from your traditional phone companies, cable providers and independent startups. I have tested several for research purposes and some were well protected, while others came up sadly lacking. My best advice here is to ask questions about how the provider ensures your conversation's security before you sign up for any service. One common answer presented by some of these providers is to put the responsibility on the device they are using at your location to connect to their service, especially the fact that it is on the edge of your network. The thinking here is that since this device only communicates with their service and is "directly" connected to the Internet that this is inherently safe. WRONG, WRONG, WRONG! Anyone with the right tools can intercept and capture the voice traffic for later playback. Rather than embarrass any of these providers directly, I will simply say that you should do your due diligence.

Conclusion

Voice Over Internet Protocol (VOIP) has been widely used for over a dozen years in the backbones of all the major telecommunications vendors and has only recently (over the last 5-10 years) become available to the consumer. While most providers do take appropriate precautions to ensure communications security there are several large vendors that do not and you should be aware as a consumer that this could compromise your conversations over that medium. That is if anyone would really want or need to record your voice conversations, but better safe than sorry and do your research before signing up for any service. I am glad to see that the technology based services like Skype, iChat, FaceTime are all employing several layers of security to ensure the fidelity and privacy of your conversations, whether text, audio or video.

MI



About The Author

Michele (Mike) Hjörleifsson, co-author of the *Apple Training Series: Security and Mobility* courseware has been developing on the Apple platforms since the Apple II+, implementing network and remote access security technologies since the early '90s. He is currently working with companies worldwide on Apple and Security consulting projects and conducting Apple IT and Pro Apps training. Feel free to contact him at mhjoerleifsson@me.com

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Managing Software Installs with Munki-Part 4

Crafting pkginfo files for munki

By Greg Neagle, MacEnterprise.org



MacEnterprise.org

Mac OS X enterprise deployment project

Previously in MacEnterprise

Over the past several months, we've been looking at munki, a set of open-source tools that can manage software installation and removal on Mac OS X machines. Munki is available for download at <http://code.google.com/p/munki>. Munki can install software packaged in Apple's Installer package format, software delivered for "drag-and-drop" installs on disk images, and Adobe CS3, CS4 and CS5 products and updates using Adobe's supported enterprise deployment tools.

We set up a demonstration munki server on a Mac OS X "client" machine, and used that server along with the munki client tools to install, update, and remove some software packages on a client machine. The munki server is simply a web server, containing three types of information:

Installer items: these are packages or disk images containing the software to be installed. In many cases, you can use a package or disk image provided by the software vendor without having to repackage or convert the installer package. For example, munki can install Firefox directly from the disk image that you download from <http://www.mozilla.com> – you do not have to "repackage" Firefox in order to install it with munki.

Catalogs: these are lists of available software, containing metadata about the installer items. The munki administrator builds these catalogs using tools provided with munki.

Manifests: A manifest is a list of what software should be installed on or removed from a given machine. You can have a different manifest for every machine, or one manifest for all of your machines. Manifests can include the contents of other manifests, allowing you to group software for easy addition to client manifests. For example, you could create a manifest listing all of the software every machine in your organization must have. The manifest for a specific client could then include the "common software" manifest, and additionally have software unique to that client.

There is a fourth class of data that is commonly stored on the munki server as well, but munki clients do not access it directly. This data is the "pkginfo" files – typically one per installer item. These contain the metadata for each installer item. Munki clients do

not access these files directly; instead they use the catalogs, which are themselves built from the pkginfo files.

Pkginfo files provide metadata about each installer item or package, information that either cannot be determined from the package itself, or info that would be too slow to get from every package each time munki runs. Much of the learning curve around munki involves crafting pkginfo files. Therefore, this month we will look at this topic in detail.

Creating pkginfo files

Fortunately, munki provides two tools to help with creating pkginfo files. The first we used in the previous two columns: `munkiimport`. `munkiimport` helps with importing new packages into the munki repository. It in turn calls a second tool to do most of the initial pkginfo generation. This tool is called, strangely enough, `makepkginfo`, and can be found at `/usr/local/munki/makepkginfo`. You can call it directly if you'd like. In its most common use, you give `makepkginfo` a package or disk image, and it outputs pkginfo. Here's an example:

```
% cd /usr/local/munki
% ./makepkginfo ~/Downloads/GoogleSketchUpMEN.dmg
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE plist PUBLIC "-//Apple//DTD PLIST 1.0//EN"
"http://www.apple.com/DTDs/PropertyList-1.0.dtd">
<plist version="1.0">
<dict>
  <key>autoremove</key>
  <false/>
  <key>catalogs</key>
  <array>
    <string>testing</string>
  </array>
  <key>description</key>
  <string></string>
  <key>display_name</key>
  <string>Google SketchUp 8.0 (English)</string>
  <key>installed_size</key>
  <integer>105008</integer>
  <key>installer_item_hash</key>
  <string>d079e58569142aa5ac6c60617146b398a974belb6d0aec3c270bfa3f
70dbc07d</string>
```


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```

<key>installer_item_location</key>
<string>GoogleSketchUpMEN.dmg</string>
<key>installer_item_size</key>
<integer>39800</integer>
<key>minimum_os_version</key>
<string>10.4.0</string>
<key>name</key>
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<key>receipts</key>
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    <key>packageid</key>
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  </dict>
  <dict>
    <key>filename</key>
    <string>Google_SU8_EN_SketchUp_Support.pkg</string>
    <key>installed_size</key>
    <integer>17192</integer>
    <key>name</key>
    <string>Google SketchUp Support</string>
    <key>packageid</key>
    <string>com.google.sketchup8.sketchup.support</string>
    <key>version</key>
    <string>8.0.3161.0.0</string>
  </dict>
</dict>
<key>filename</key>
<string>Google_SU8_EN_SketchUp_Free.pkg</string>
<key>installed_size</key>
<integer>4</integer>
<key>name</key>
<string>Google SketchUp 8.0 (English) Add-
Ons</string>
<key>packageid</key>
<string>com.google.sketchup8.sketchup_free.addons</string>
<key>version</key>
<string>3.0.3161.0.0</string>
</dict>
</array>
<key>uninstall_method</key>
<string>removepackages</string>
<key>uninstallable</key>
<true/>
<key>version</key>
<string>3.0.3161.0.0</string>
</dict>
</plist>

```

You could copy and paste this into a text editor for editing, or use shell redirection to create a text file directly; something like:

```
makepkginfo GoogleSketchUpMEN.dmg > GoogleSketchUp.plist
```

In either case, the pkginfo is probably not ideal as-is, and will need to be edited further. Let's look at some common edits.

Name

```
<key>name</key>
```

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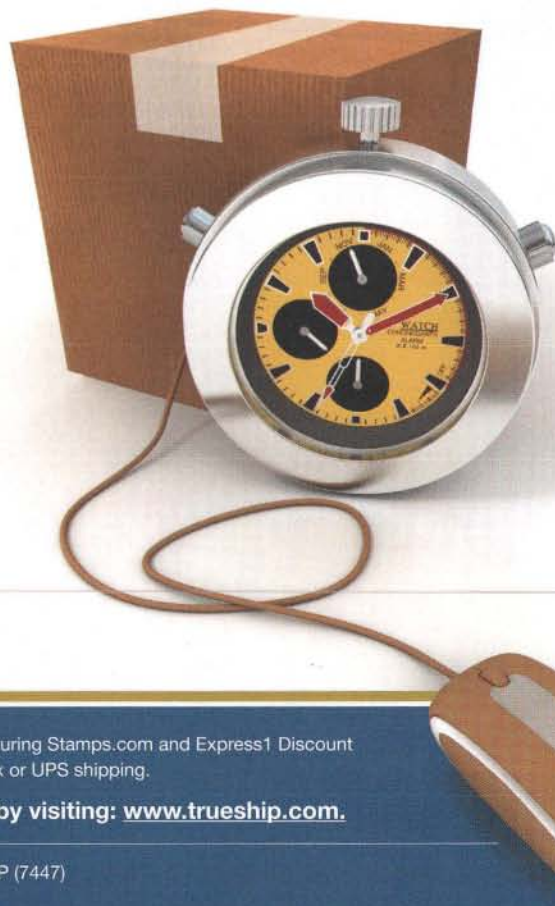
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```
<string>Google SketchUp 8.0 Installer</string>
```

name is the most important key in a pkginfo file. It is this name that is used in manifest files to specify a package to be installed. In order for munki to find the latest version of a package, all the versions of a package must have the same name in their pkginfo item.

While you could use the name that **makepkginfo** pulled out of the Installer package, you probably want to remove the version number and simplify it:

```
<key>name</key>
<string>GoogleSketchUp</string>
```

(I remove the spaces from the name – but there's really no requirement to do this; it's just an old habit. It does make it easier to remember the name without having to check if it's "Google SketchUp" or "Google Sketch Up"...). If you later download a newer version of Google SketchUp, you'd want to make sure the name for its pkginfo was the same as the name you chose for this one).

Version

```
<key>version</key>
<string>3.0.3161.0.0</string>
```

version is the next most important key. This is how munki finds the most recent version (or a specific version) of a package. You'll see that the version that **makepkginfo** generated seems to be wrong. This is because the version of the SketchUp installer package is 3.0.3161.0.0. (Note – this is not common. Usually you'll find the installer package version more accurately reflects the version of the software it installs). You'll probably want to edit the version string to match the version of the Google SketchUp application:

```
<key>version</key>
<string>8.0.3161.0.0</string>
```

Catalogs

```
<key>catalogs</key>
<array>
  <string>testing</string>
</array>
```

By default, **makepkginfo** puts newly generated items into a "testing" catalog. This is a useful default. You can configure a subset of your munki clients to look first in the testing catalog for package information. By placing new versions of software in the testing catalog, only your "testing" subset of machines will install the latest version. Later, when you are confident a new version won't cause issues for you, you can move it to a "production" or "release" catalog. All of your machines would be configured to check the production catalog.

```
<key>catalogs</key>
<array>
  <string>production</string>
</array>
```

Note that the value of the **catalogs** key is an array – you can place an item in multiple catalogs. This is not used often, but

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one reason to do this would be to create multiple testing groups. Perhaps you are testing a new version of Firefox. You have a group of testers (for example, a group of web developers) that shouldn't get every new application, but do want newer versions of Firefox sooner than the general population. You can make this happen by creating a "firefox-testing" catalog. You create a munki catalog simply by defining at least one item as being in that catalog. So by adding "firefox-testing" to the list of catalogs for the latest version of Firefox, you cause a "firefox-testing" catalog to be created with at least one item.

```
<key>catalogs</key>
<array>
  <string>testing</string>
  <string>firefox-testing</string>
</array>
```

You would also then list the "firefox-testing" catalog in the list of catalogs for your Firefox testers' manifest(s):

```
<key>catalogs</key>
<array>
  <string>firefox-testing</string>
  <string>production</string>
</array>
```

This causes munki to look for items in the firefox-testing catalog first, looking in the production catalog only if no matching package is found in firefox-testing.

name and **version** are the most important keys, and so you should always check these and edit if needed. If you are using a testing catalog for new packages, you can often leave the **catalogs** key as-is, but if you want to move a package directly into production or have a special configuration, you may need to edit this key as well.

Display Name and Description

```
<key>description</key>
<string></string>
<key>display_name</key>
<string>Google SketchUp 8.0 (English)</string>
```

The **display_name** and **description** keys are optional, but help provide a better end-user experience. If provided, the **display_name** is used instead of the name when information is displayed to the user in Managed Software Update.app. The description, if it exists, is displayed below when a user selects an item in Managed Software Update.app.

```
<key>description</key>
<string>3D design software from Google.</string>
<key>display_name</key>
<string>Google SketchUp</string>
```

If I edit the two keys as shown above, it appears in Managed Software Update.app as in Figure 1.



Figure 1 – Google SketchUp displayed in Managed Software Update.app

For the display name, I removed the version number, since that is displayed elsewhere. The description can be as long as you'd like.

Installs Key

The pkginfo for Google SketchUp we've worked on so far is perfectly useable and functional. But there are more munki features that can be controlled by additional pkginfo edits.

Receipts vs. Installs

Our Google SketchUp pkginfo has a **receipts** key, listing the receipts for the Apple packages that are installed. This info can be used in two different ways. The first use for the **receipts** information is when removing an item. Munki uses the receipts to determine what files were installed, and compares that against all the other receipts on the machine. Any files listed in the item's receipts that are not in any other receipts are removed.

The second use for **receipts** is as a method to determine whether or not an item is installed, and therefore if munki should attempt to install the item. If munki has no other information, it will look for the existence of the receipts that are listed under the **receipts** key. If any of these are missing or an older version, the item will be installed.

But there are problems with this double duty for receipts. It is not uncommon for metapackages (packages that contain other packages) to install only a subset of the available packages, depending on the OS version and other installed software. This means that the list of receipts generated by **makepkginfo** may contain receipts for packages that don't actually get installed, or worse, are installed on some machines, but not others. If any receipt is missing, munki attempts to install the package. But if installing the package does not leave every receipt munki has on file, munki will continue to attempt to install the package again and again.



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- EASYU Archive protect OS X
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There are two ways to deal with this problem. The first is to edit the pkginfo, deleting any receipt for subpackages that are not actually installed. If the subpackages that don't get installed are only installed on Tiger machines, for example, and you don't have any Tiger machines, this solution may work. But if the subpackages are installed on some machines you manage and not others (perhaps due to hardware differences, or the existence of other software on the machine), this solution causes another problem. If you delete a reference to a receipt that does get installed, munki will not be able to accurately remove the item, as you have removed some of the information it needs to determine what needs to be removed.

A better solution to this problem is to provide munki with alternate information it can use to decide whether or not to install the item, leaving the receipts key to be used only for removing the item. Pkginfo files can contain an **installs** key, which lists items that are installed by the item. This key must exist (and is generated by default) for installer items that aren't Apple packages (like drag-n-drop disk images), as these items don't leave receipts. **makepkginfo** cannot (currently) automatically generate an **installs** key for Apple packages, but you can do so manually.

As an example of an automatically generated **installs** key, we can review the pkginfo items created for Firefox and Google Chrome in previous installments, as these items are distributed as drag-n-drop disk images. Here's the **installs** key for Firefox 3.6.13:

```
<key>installs</key>
<array>
  <dict>
    <key>CFBundleIdentifier</key>
    <string>org.mozilla.firefox</string>
    <key>CFBundleName</key>
    <string>Firefox</string>
    <key>CFBundleShortVersionString</key>
    <string>3.6.13</string>
    <key>path</key>
    <string>/Applications/Firefox.app</string>
    <key>type</key>
    <string>application</string>
  </dict>
</array>
```

Here's the same key for a recent version of Google Chrome:

```
<key>installs</key>
<array>
  <dict>
    <key>CFBundleIdentifier</key>
    <string>com.google.Chrome</string>
    <key>CFBundleName</key>
    <string>Chrome</string>
    <key>CFBundleShortVersionString</key>
    <string>8.0.552.215</string>
    <key>minosversion</key>
    <string>10.5.0</string>
    <key>path</key>
    <string>/Applications/Google Chrome.app</string>
    <key>type</key>
    <string>application</string>
  </dict>
```

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```
</array>
```

There's a fair amount of information there. Fortunately, you don't have to generate these items by hand; `makepkginfo` can help you. Let's create one for Google SketchUp. First we must install Google SketchUp on a machine, so the application is at its correct path. We can then use `makepkginfo` with the `-f` flag to generate an item for the `installs` list:

```
% cd /usr/local/munki/
% ./makepkginfo -f /Applications/Google SketchUp\
8/SketchUp.app
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE plist PUBLIC "-//Apple//DTD PLIST 1.0//EN"
"http://www.apple.com/DTDs/PropertyList-1.0.dtd">
<plist version="1.0">
<dict>
<key>installs</key>
<array>
<dict>
<key>CFBundleIdentifier</key>
<string>com.google.sketchupfree8</string>
<key>CFBundleName</key>
<string>SketchUp</string>
<key>CFBundleShortVersionString</key>
<string>8.0.3161</string>
<key>path</key>
<string>/Applications/Google SketchUp
8/SketchUp.app</string>
<key>type</key>
<string>application</string>
</dict>
</array>
</dict>
</plist>
```

All we need is the actual `installs` section, which we can copy and paste into the Google SketchUp `pkginfo`:

```
<key>installs</key>
<array>
<dict>
<key>CFBundleIdentifier</key>
<string>com.google.sketchupfree8</string>
<key>CFBundleName</key>
<string>SketchUp</string>
<key>CFBundleShortVersionString</key>
<string>8.0.3161</string>
<key>path</key>
<string>/Applications/Google SketchUp
8/SketchUp.app</string>
<key>type</key>
<string>application</string>
</dict>
</array>
```

This tells `munki` to check for the `SketchUp.app` inside the `/Applications/Google SketchUp 8` folder, and if it exists, it must be version 8.0.3161 or later. If it doesn't exist, or is older, `munki` will attempt to install Google SketchUp 8.0.3161.

You may have multiple items in the `installs` list, and these items are not limited to applications. You can check for other bundle types, like Internet plug-ins or System Preferences panes, or `Info.plist` files at specific paths. These can all be compared to a specific version. You may also check for the existence of directories or files. With individual files, a checksum is generated – if the file on disk exists but its checksum doesn't match the one in

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the `installs` key, the item will be installed. For all of these file types, you can use `makepkginfo -f` to generate `installs` info.

The `installs` key provides a flexible and powerful way to help `munki` decide if a given item should be installed. It also provides for a certain amount of "self-repair". Using our prior example where we provide an `installs` key for our Google SketchUp item that lists the `SketchUp.app` application, if a privileged user were to delete the app or its entire enclosing folder, on its next run, `munki` would once again schedule an install of Google SketchUp.

Package Dependencies

Updates

`Munki` supports two kinds of package dependencies. Both require certain keys in `pkginfo` files. The first type of dependency allows you to mark a given package as an update for another package. We'll use Microsoft Office 2011 as an example. Our initial package is the disk image for the Office 2011 installer. Its `pkginfo` name is "Office2011" and its version is "14.0.0.0.0". Later, Microsoft releases an update for Office 2011. We create a new `pkginfo` item for the update, which we name "Office2011_Update", version "14.0.1.0.0". But we don't want to have to modify all the manifests that include Office 2011 and manually add the update to the list of managed_installs – instead, we want `munki` to discover and apply

the update “automagically.” We can do this by adding a new key – **update_for** – to the Office2011_Update pkginfo item.

```
<key>update_for</key>
<array>
  <string>Office2011</string>
</array>
```

This key informs munki that this item is an update for Office2011. On any machine whose manifest contains “Office2011” in its **managed_installs** list, this update will also be considered for installation. When Microsoft releases the Office 2011 14.0.2 update, we can repeat the procedure for this update, and the next, and the next. In this way, all your managed machines with Office 2011 automatically find and install the updates.

You can also use the **update_for** key to mark other packages that aren't strictly updates so that they will be installed with (and removed with) another package. There are several pieces of software for which we need to install some additional files – licensing configuration files, or other site or organization-specific customizations. Instead of modifying the vendor's installer or repackaging the software, we package our additions and mark them as an update for the third-party software.

A good example of this is Firefox. Firefox is updated frequently, so it is convenient to be able to use the unmodified disk image as downloaded from Mozilla.com as the installation source. We also have some Firefox extensions we want everyone to have. By packaging these extensions separately, but marking them as updates for Firefox, any machine that gets Firefox also gets the extensions. When Firefox is removed, so are the extensions.

Requirements

Sometimes you need to ensure packages are installed in a certain order – for example, Adobe Acrobat 9 Pro has several updates that must be installed in the order they were released. If you name all the updates “AcrobatPro9Update” and you mark all them like so:

```
<key>update_for</key>
<array>
  <string>AcrobatPro9</string>
</array>
```

munki will find the latest “AcrobatPro9Update” (as of this writing, 9.4.1) and try to install that. Unless the currently installed version of Acrobat Pro is 9.4.0, this is likely to fail. So you need to tell munki that before you install the 9.4.1 update, you must ensure the 9.4.0 update is installed. To do this, you use the **requires** key.

```
<key>requires</key>
<array>
  <string>AcrobatPro9Update-9.4.0.0.0</string>
</array>
```

As it turns out, the 9.4.0 update requires the 9.3.4 update:

```
<key>requires</key>
<array>
  <string>AcrobatPro9Update-9.3.4.0.0</string>
</array>
```

This update in turn requires the 9.3.3 update, which in turn requires the 9.3.2 update, and so on, all the way back to the 9.1.0 update. Manually installing all of these updates in the right order is a giant pain. Getting them all into munki and installing in the right order is also a pain, but once you've done it, munki can then do it on every machine that has or needs Acrobat Pro 9.

The **requires** key can also be used for other relationships: perhaps you have a tool to install that requires that the Xcode tools also be installed. You could add a **requires** key specifying that your tool requires Xcode, and so when someone tried to install your tool on a machine using munki, Xcode would be installed first.


More Optional pkginfo Keys

There are more optional pkginfo keys that can be useful in some situations. Here are a few.

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```
<key>minimum_os_version</key>
<string>10.5.0</string>
<key>maximum_os_version</key>
<string>10.5.8</string>
```

You can use these keys to specify that a given version of a package should not be installed on an OS version lower than, say 10.5.0, or higher than, say, 10.5.8. (This is really useful with Xcode.)

```
<key>supported_architectures</key>
<array>
  <string>i386</string>
  <string>x86_64</string>
</array>
```

This key can be used to limit the installation of a given version of a package to machines matching a certain processor architecture. In the above example, this would not install on a PowerPC-based machine.

Version 0.7.0 and later of munki support a few more interesting keys:

```
<key>forced_install</key>
<true/>
<key>forced_uninstall</key>
<true/>
```

These keys can be used to indicate that a package is safe to install and/or uninstall without the user's consent. A package marked with **forced_install** equal to true will be silently installed in the background without the user being notified. Use this carefully.

```
<key>blocking_applications</key>
<array>
  <string>Firefox</string>
  <string>Safari</string>
  <string>Opera</string>
</array>
```

This key lists applications that may block the installation of a package. This key can come into effect in two circumstances. The first: a user is notified of updates to install and elects to install without logging out. In this scenario, if one or more of the applications in the **blocking_applications** list is open, the user is warned to quit the application(s) before being allowed to proceed.

The second scenario is in conjunction with the **forced_install** and **forced_uninstall** keys. If any application in the **blocking_applications** list is open, the forced operation will not be attempted for that package. The intent is to prevent munki from trying to update or remove open applications and potentially causing crashing and data loss.

Even More Keys

There are many more keys that may appear in a pkginfo item, but most of the ones not mentioned so far are automatically created by **makepkginfo** based on the contents of an installer item. Here are some additional keys:

installer_item_hash: a checksum of the installer item so we can verify the downloaded item matches the original item. Auto-generated.

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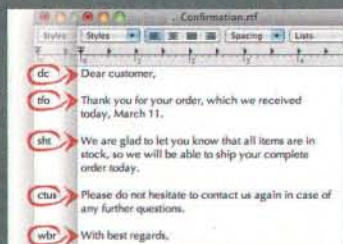
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installer_item_location: relative path to the installer item (package) inside the pkgs directory on the munki server. Auto-generated, but may need to be edited if you move or modify the path to the package.

RestartAction: does the package require a logout or restart? Auto-generated from Apple packages, but you can add or modify this and may need to for non-Apple packages. Set to "RequireLogout" if logout is needed, or "RequireRestart" if a restart is needed.

installer_type/uninstall_method: keys used by munki to determine the correct install and uninstall methods. Auto-generated.

uninstallable: a Boolean that indicates whether or not the package is uninstallable. Auto-generated based on the installer type, but you may need to set it to false for items (especially Apple updates) that you know cannot be safely uninstalled.

Remember that when you edit a pkginfo file on the munki server, you must run `makecatalogs /path/to/munki/repo` to get your changes incorporated into the munki catalogs. A common mistake is to make changes and forget to run `makecatalogs`.

Conclusion

Whew – that's a lot of info to digest. Pkginfo files are easily the most complicated part of munki, but that's because they contain virtually all of the information munki needs to do its job. Pkginfo files contain both metadata extracted from the packages themselves, and additional information that only the munki admin

can provide. `munkiimport` and `makepkginfo` can help create the pkginfo files, but you will sometimes need to manually edit these files to take advantage of all of munki's features.

That concludes (for now) our look at munki. We haven't exhausted all of munki's features, but hopefully we've covered enough for you to decide whether or not it's worth further investigation. If you'd like to continue your exploration of this set of tools, visit the munki website at <http://code.google.com/p/munki>, and read (or join) the munki-dev Google Group at <http://groups.google.com/group/munki-dev>.

MI

About The Author

Greg Neagle is a member of the steering committee of the Mac OS X Enterprise Project (macenterprise.org) and is a senior systems engineer at a large animation studio. Greg has been working with the Mac since 1984, and with OS X since its release. He can be reached at gregneagle@mac.com.

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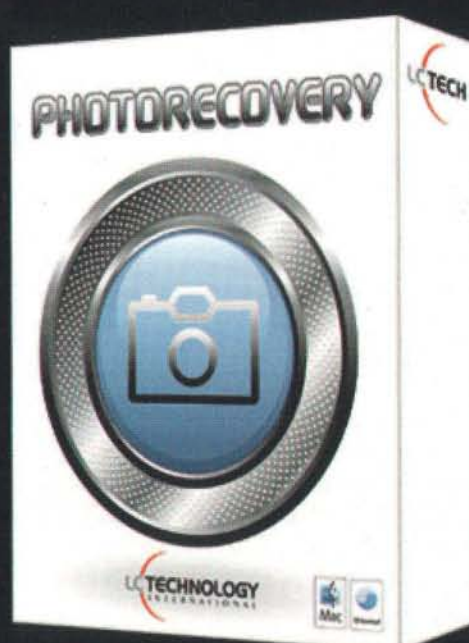
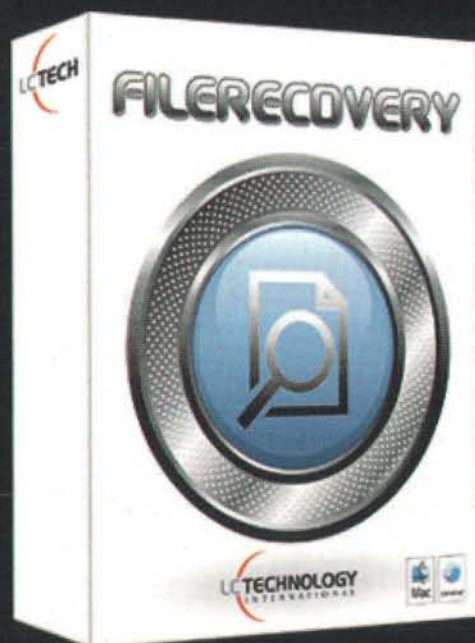
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REAL WORLD REVIEW

by Joshua Long

Sophos Anti-Virus for Mac, Home Edition

Enterprise-grade antivirus
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for home Macs

Introduction

Businesses are often required by laws and company policies to run antivirus software on all their computers, Macs included. In the home environment, however, there are no such requirements, and Mac users have debated for years about whether they should go to the trouble of running antivirus software. Is it really worthwhile to spend \$40 every year to protect a Mac with commercial-grade antivirus software, or to endure the agonizing speed degradation commonly associated with AV? Thanks to Sophos, home users can now have quality protection without these frustrations.

Why Mac antivirus software?

Enterprise antivirus maker Sophos announced in November that they would begin offering a free Home Edition of Sophos Anti-Virus to all Mac users. The announcement came just one week after SecureMac and Intego had independently published information about new Java-based Mac malware spreading through Facebook and other sites, dubbed *Boonana* by SecureMac and identified as a variant of the Koobface malware by Intego.

Two weeks after the release of Sophos Anti-Virus for Mac Home Edition, Sophos released a report showing that a significant number of Macs running their software had been infected with malware. This malware included both Mac-native threats as well as plenty of Java-based malware, which Sophos pointed out “could easily be adapted to download Mac-based threats,” as was the case with *Boonana*. Two Mac-specific threats, *OSX/Jablay-C* and *OSX/DNSCha-E*, were each found on about 1 in every 100 Macs scanned. (For the full Sophos report, see http://macte.ch/sophos_stats).

Sophos vs the competition

Sophos' antivirus engine is one of the best on the market. In AV-Comparatives' (av-comparatives.org) November 2010 tests of proactive detection of new malware, Sophos Anti-Virus ranked in the top three PC antivirus products, earning the highest certification level (*Advanced+*). The tests also took into consideration the number of false positives, of which the Sophos engine had “few.”

Let's take a look at how Sophos Anti-Virus Home Edition compares to other free alternatives for the Mac. The two most prominent freeware antivirus solutions are ClamXav (clamxav.com) and PC Tools iAntiVirus (iantivirus.com), and each is very different from Sophos.

ClamXav is free for anyone to use in any environment, from home computers to enterprise workstations. Although ClamXav does not provide on-access scanning of the whole computer, it can be manually configured to scan files that are downloaded or copied to specific folders, for example ~/Downloads and ~/Desktop. Like Sophos, ClamXav detects malware designed for any platform, as opposed to Mac-only malware.

PC Tools iAntiVirus is only free for home use, and although it does offer on-access scanning, it only detects Mac-specific malware. Neither ClamXav nor iAntiVirus is a comprehensive solution compared to Sophos. Of the three, only Sophos will detect infected Web pages and e-mail attachments as soon as they are downloaded, regardless of the threat's target platform.

I tested Sophos and ClamXav with several hundred samples that I've collected from infected computers, Web sites, and e-mails over the past couple years. ClamXav only detected about 75% as many files as Sophos, although ClamXav detected some files (particularly Windows adware) that Sophos did not detect. Neither one detected all the samples, which was expected; no antivirus solution detects 100% of infected or potentially dangerous files.



Figure 1 – Threat detected by Sophos Anti-Virus

Effectiveness

Unlike most full-featured antivirus solutions, the default settings of Sophos Anti-Virus do not automatically delete infected files or prompt users to do so. Instead, Sophos displays an alert informing the user that a threat has been detected, with options

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to open the Quarantine Manager or close the dialog box, and the latter is the default selection. Regardless of which option the user chooses, as long as Sophos' on-access scanner is enabled, the file is inaccessible and cannot be opened or even duplicated in the Finder or the Terminal (even using `sudo`).

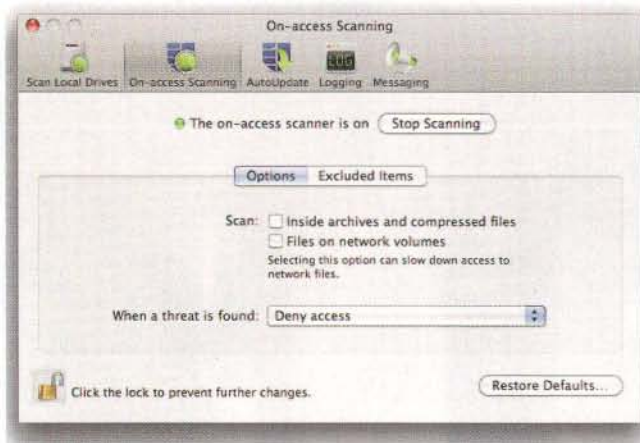


Figure 2 – When a threat is found, Sophos denies access by default

If a malicious Mac application is detected by Sophos, attempting to open the application will result in two Mac OS X dialog boxes informing the user that they can't open the application because it is "not supported on this type of Mac." Thus, Sophos effectively quarantines the files in place.

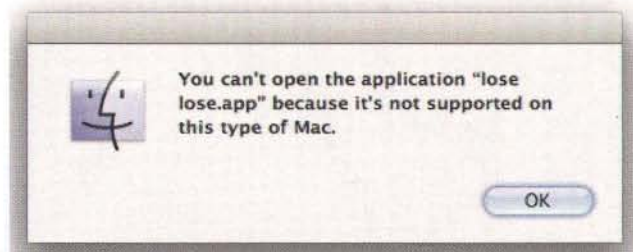


Figure 3 – Malware is not supported on this type of Mac

Even trying to access quarantined files from another computer via a network share proves fruitless. I had Sophos running on an iMac and no antivirus software on a MacBook Pro. From the MacBook Pro I connected to an AFP share on the iMac and tried to copy a file from the iMac to the local hard drive. This resulted in a Mac OS X dialog box explaining that I did not have permission to access the file. I also tried to duplicate an infected file in-place on the network share, which caused the MacBook Pro's Finder to crash and relaunch (note to self: file a bug report). In any case, Sophos quarantines files on the local system in such a way that they cannot be accessed by remote systems.

Annoyances

One strange and annoying issue I've encountered is that Sophos Anti-Virus frequently grays out the Clean Up Threat button

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for items that should be easy for Sophos to delete on its own. For example, the action available for dealing with .zip files downloaded from parcel scam e-mails is **Clean up manually**, meaning that users must try to locate the infected files on their computer. This may or may not be easy, depending on whether the full path is shown in the Quarantine Manager; if the path or file name is too long, the path will be truncated, so you may have to use Spotlight or a third-party search utility to locate the file (refer to the screenshot of the Quarantine Manager). You cannot resize the window so there is no way to see the full path, and there is no *Show in Finder* option either.



Figure 4 – “Clean up manually”... okay, so what’s the full path?

In other cases, instead of **Clean up manually** the available action will be **Restart Mac** instead, even when there’s absolutely no reason why that should be necessary. I came across this after downloading fake ActiveX video codec malware, which consisted of nothing more than Windows .exe files. Why on earth would Sophos need to restart the computer to clean Windows executables that aren’t in use? Worse still, restarting your Mac won’t even clean up the threat; it will still be there in the Quarantine Manager after restarting.

Fortunately, Sophos did *not* gray out the **Clean Up Threat** button for the Mac OS X-specific threat I had it scan (a dangerous Space Invaders-style game called *lose/lose* which deletes files in the user’s home directory when you destroy enemy spaceships); no manual deletion or restarting is required to clean that Mac-native threat.

Speed

Antivirus suites have a reputation of slowing down computers. In my testing, there was no noticeable decrease in system speed or usability after installing the Sophos software. I even tested it on a low-end Hackintosh netbook (a Dell Mini 10v with a 1.6 GHz Intel Atom processor and 1 GB RAM) and the system was still quite usable after installing Sophos.

Conclusion

For those who support Macs in a home environment, I recommend trying Sophos Anti-Virus for Mac Home Edition.

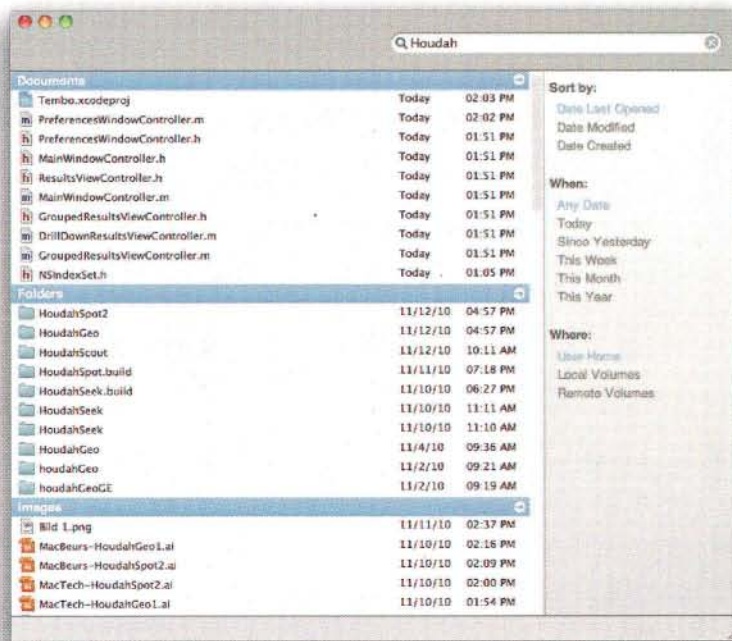


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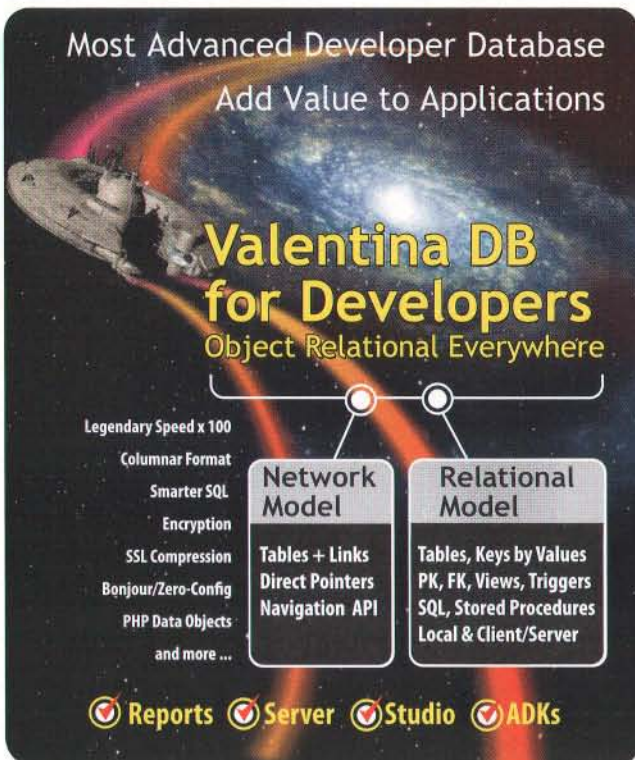
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Although there's currently only a small amount of Mac-specific malware in the wild, Sophos can protect Macs from other threats such as malicious JavaScript redirectors, Adobe Flash files that exploit known vulnerabilities (see Mike Hjörleifsson's CoreSec column in the *MacTech* November 2010 issue), multiplatform Java-based attacks like Boonana, and Windows-based malware that could accidentally be opened in a virtual environment like Parallels or VMware, and it can also discover infections on USB flash drives that you might have picked up from an infected PC unbeknownst to you.

It's time for us to put away our *Smug Virus-Free Mac User* shirts of yore and become more proactive at defending Macs from security threats. Three cheers to Sophos for lighting the way into battle.

MT

About The Author



Joshua Long has a master's degree in IT concentrating in Internet Security, is a Security+ certified professional, and is currently earning a Ph.D. in Business Administration specializing in Computer and Information Security. Josh writes about malware and other information security topics at security.thejoshmeister.com. He is also the producer and host of MacTech Magazine's

official podcast, *MacTech Live* (www.mactech.com/live). You can follow him on Twitter @theJoshMeister or contact him via e-mail at jlong@mactech.com.



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What do you do?

I'm a software engineer. I build Mac and iPhone e-book software for VitalSource Technologies, and I'm the founder and solo programmer at Riverfold Software. I have two Mac products, Clipstart and Wii Transfer, and a new iPad app for Twitter called Tweet Library. I also co-host a podcast with indie developer Daniel Jalkut called Core Intuition where we talk about the business and everyday life of software development.

How long have you been doing what you do?

I started writing apps for the Mac about 16 years ago, first in the Pascal programming language, then later in C, C++, and now mostly Objective-C. It's been fascinating to watch the Mac evolve, through the dark days when Apple was "doomed" and you were crazy to develop software for the platform, to the modern era successes of Mac OS X and the iPhone.

What was your first computer?

The first computer I actually owned was a Macintosh Classic running System 6.0.7. It was underpowered compared to the Mac cutting edge even at the time, but it was affordable and, to me, amazing. I used it for school work, dialing up to BBSes, and tinkering with code. My main computer has been a Mac ever since.

What is the advice you'd give to someone trying to get into this line of work today?

As great as the Mac experience is, it's not perfect; there are plenty of problems that still haven't been solved well. Find one and build a solution for it, either as your own independent product or as a free tool that can serve as your resume. Whether it's a template or script or app or design, showing people what you can do will open up new opportunities. Start a blog and don't worry if it's a small audience. If you share what you learn you'll be giving back to the community and demonstrating your personality and skills with future employers or customers.

What's the coolest tech thing you've done using OS X?

I like the work I did on Wii Transfer, which streams media to the Nintendo Wii. It used a few different technologies—web server, media conversion, Flash widgets, iLife integration, Bluetooth—to achieve something that was difficult to do before. The lesson I learned making Wii Transfer is that not everything has to be brand new; sometimes building a product is just taking a few small "easy" pieces and combining them in a clever way.

Where can we see a sample of your work?

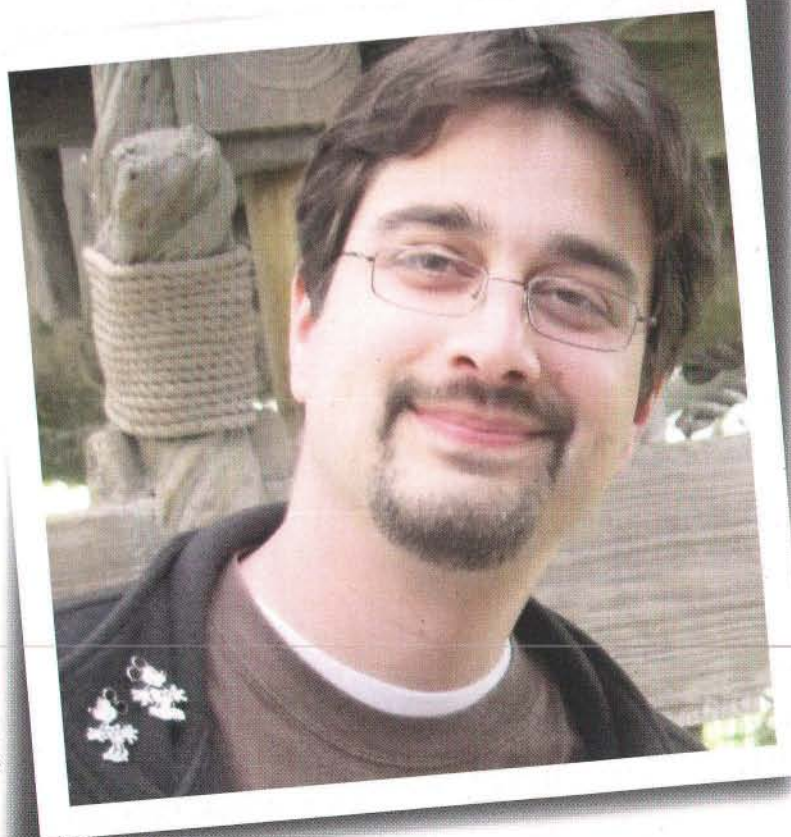
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The next way I'm going to impact OS X/the Mac universe is:

I've found I can only work on a few separate applications without spreading myself too thin, so for 2011 my goals are pretty modest: take everything I've already built and make it better. I'm also intrigued by the Mac App Store and hope to have at least one app there by the time you read this. We don't know exactly what impact the App Store will have on the Mac software market, but it's exciting that it will likely be a very big deal.

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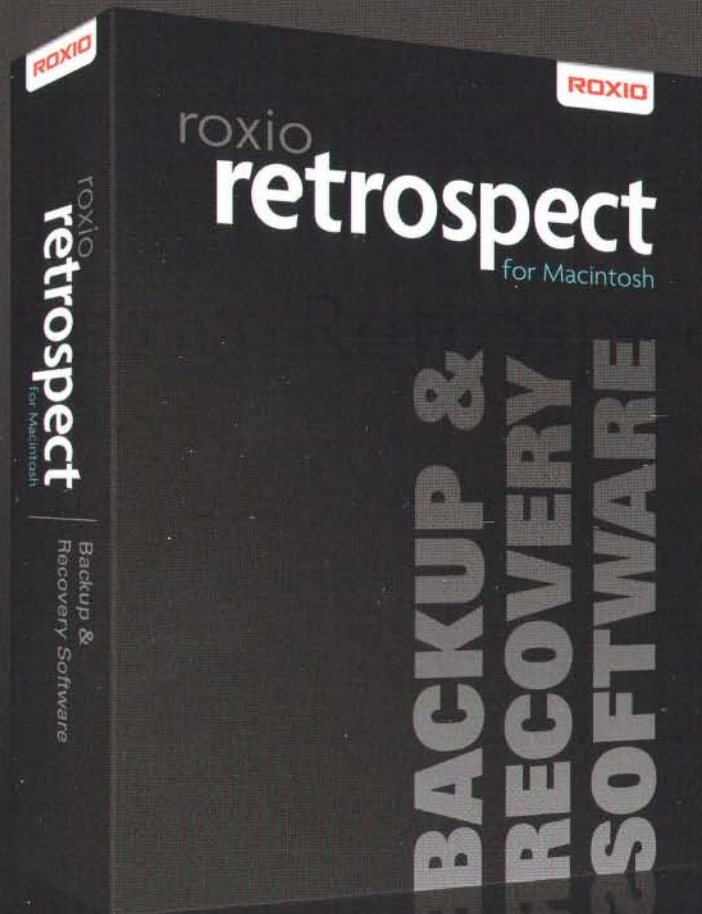
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